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DEPARTMENT OF LABOR

Mine Safety and Health Administration

30 CFR Parts 56, 57, 60, 71, and 72

[Docket No. MSHA–2026–0200]

RIN 1219-AC22

Respirable Crystalline Silica and Respiratory Protection

AGENCY: Mine Safety and Health Administration (MSHA), Department of Labor.

ACTION: Proposed rule, request for comments; notice of public hearing.

SUMMARY: This proposed rule clarifies and modifies provisions of the respirable crystalline silica and respiratory protection standards that were established in MSHA's 2024 final rule titled "*Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection*." The changes provide clarity and make improvements to the requirements for methods of compliance, exposure monitoring, respiratory protection, medical surveillance, and recordkeeping while maintaining strong protection of miners. The proposal also includes related conforming amendments.

DATES: *Written Comments.* Written comments must be received or postmarked by midnight Eastern Time on [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE ***FEDERAL REGISTER***].

Public Hearing. MSHA will hold a virtual-only public hearing on December 15, 2026. For more information on the public hearing, see SUPPLEMENTARY INFORMATION.

ADDRESSES: All submissions must include RIN 1219-AC22 or Docket No. MSHA–2026–0200. You should not include personal or proprietary information that you do not wish to disclose publicly. If you mark parts of a comment as "business confidential" information, MSHA will not post those parts of the comment. Otherwise, MSHA will post all comments without

change, including any personal information provided. MSHA cautions against submitting personal information.

You may submit comments and informational materials, clearly identified by RIN 1219-AC22 or Docket No. MSHA–2026–0200, by any of the following methods:

1. *Federal E-Rulemaking Portal: https://www.regulations.gov*. Follow the online instructions for submitting comments for MSHA–2026–0200. A plain language summary of the rule is also available on the Federal E-Rulemaking Portal.

2. *Email: zzMSHA-comments@dol.gov*. Include "RIN 1219-AC22" in the subject line of the message.

3. *Regular Mail or Hand Delivery*: MSHA, Office of Standards, Regulations, and Variances, 200 Constitution Avenue NW, Washington, DC 20210. Before visiting MSHA in person, call 202-693-9440 to make an appointment. No telefacsimiles ("faxes") will be accepted.

FOR FURTHER INFORMATION CONTACT: Corliss A. Josephs-Conway, Acting Director, Office of Standards, Regulations, and Variances, MSHA at *MSHARulemaking@dol.gov* (e-mail) or 202-693-9440 (voice). This is not a toll-free number.

SUPPLEMENTARY INFORMATION:

MSHA will hold a virtual-only public hearing to provide industry, labor, and other interested parties with an opportunity to present oral statements, written comments, and other information on the proposed rule. The virtual-only public hearing will begin at 9 a.m. Eastern Time on December 15, 2026. If necessary, the hearing will continue on December 16, 2026.

The virtual-only public hearing will begin with an opening statement from MSHA, followed by an opportunity for members of the public to make oral presentations. Speakers and other attendees may present information to MSHA for inclusion in the rulemaking record. The hearing will be conducted in an informal manner. Formal rules of evidence or cross examination will not apply.

A verbatim transcript of the proceeding will be prepared and made a part of the rulemaking record. A copy of the transcript will be available to the public. MSHA will make the transcript of the hearing available at *http://www.regulations.gov*.

MSHA will accept post-hearing written comments and other appropriate information for the record from any interested party, including those not presenting oral statements, received by midnight Eastern Time on [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE ***FEDERAL REGISTER***].

Pre-registration is not required to attend the hearing. Additional information on how to attend the virtual-only public hearing will be available at *https://www.msha.gov/regulations/rulemaking/silica-public-hearing-information*.

Those who wish to speak during the virtual public hearing are encouraged to register in advance at *https://www.msha.gov/regulations/rulemaking/public-hearing-information*. Speakers will be called in the order in which they signed up. Those who do not register in advance will have an opportunity to speak after all those who pre-registered have spoken. You may submit hearing testimony and documentary evidence, identified by docket number (MSHA–2026–0200), by any of the methods previously identified.

The preamble to the proposed rule follows this outline:

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I. Introduction

The purpose of this proposed rule is to provide clarity and make improvements to the requirements established in the April 18, 2024, final rule "*Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection*" (2024 Silica Final Rule, 89 FR 28218). The proposed rule includes clarifications and improvements to requirements for methods of compliance, exposure monitoring, respiratory protection, medical surveillance, and recordkeeping while maintaining the protection of miners. The proposal also includes related conforming amendments.

After the 2024 Silica Final Rule's publication, MSHA held seven stakeholder meetings fielding questions from the public and received stakeholder emails asking questions regarding implementation of MSHA's silica requirements. Many stakeholders asked for clarification on interpreting the restriction on the rotation of miners to comply with the silica permissible exposure limit (PEL) under § 60.11 in title 30 of the Code of Federal Regulations (30 CFR). MSHA is proposing changes to the requirements in § 60.11 to clarify when rotation of miners is permitted for miners exposed to respirable crystalline silica.

Additionally, many stakeholders asked on what basis MSHA would issue citations for silica sample results that exceed the PEL. Stakeholders also asked how MSHA would consider error in silica sample results after the Agency determined it would not include a specific error factor in the 2024 Silica Final Rule.

When developing the 2024 Silica Final Rule, MSHA anticipated variability in silica sample results because MSHA provided operators with the flexibility to choose from multiple commercially available particle size-selective samplers that conform to the International Organization for Standardization (ISO) 7708:1995(E) standard "*Air quality—Particle size fraction definitions for health-related sampling*." from multiple analytical methods, and from third-party laboratories accredited to the ISO/International Electrotechnical Commission (IEC) 17025 standard "*General requirements for the competence of testing and calibration*

laboratories." This flexibility allowed mine operators to select sampling equipment, analytical methods, and laboratories that meet their business needs; to avoid equipment availability constraints; and to ensure they receive timely and accurate results needed to protect miners from silica overexposure.

Since the 2024 Silica Final Rule's publication, MSHA reviewed mine operators' and MSHA inspectors' sample results. The review demonstrated consistency across respirable crystalline silica samples taken by MSHA inspectors and more variability across respirable crystalline silica samples taken by mine operators. MSHA is proposing to add a single, uniform error factor adjustment of 21 percent to its standards that would be applied to both MSHA sample results and operators' sample results to determine noncompliance with the PEL or exposure at or above the action level. Additionally, MSHA is proposing that only MSHA samples would be the basis for issuing citations for noncompliance with the PEL because MSHA can ensure accuracy across inspectors' samples with a high level of confidence.

The Agency does not think it is feasible to develop an error factor for each operator sample because mine operators may use any combination of the multiple commercially available particle size-selective samplers, various analytical methods, and different third-party laboratories that meet the requirements of 30 CFR part 60 (Part 60); therefore, each combination would require a separate and unique error factor. As a result, MSHA is proposing to allow operators to apply the same error factor adjustment of 21 percent to their sample results for consistency. Mine operators would use their sample results to determine if silica exposure levels at their mines require them to take action to protect miners from respirable crystalline silica overexposures.

Based on updated analysis and stakeholder comments, MSHA is also proposing other changes to improve exposure monitoring for respirable crystalline silica, to clarify when metal and nonmetal (MNM) mine operators may use respirators, and to adopt the Occupational Safety and Health Administration's (OSHA's) Respiratory Protection Standard which would improve safety for miners when wearing respirators voluntarily.

MSHA is also proposing changes to its medical surveillance requirements to address the potential for constraints on the capacity of NIOSH-certified B Readers for medical examinations due to limitations in multi-state support and expected growth in the number of MNM mines for critical minerals. The proposal would update medical surveillance requirements to be more risk-based, which would provide relevant medical information to those miners (both MNM and coal) at risk of material impairment of health or functional capacity from overexposure to respirable crystalline silica. Other proposed changes to medical surveillance would improve access for MNM miners to obtain voluntary medical examinations and remove the requirement for mine operators to ensure the results of chest X-ray classifications are provided to the National Institute for Occupational Safety and Health (NIOSH).

Additionally, MSHA is proposing changes to the recordkeeping requirements under Part 60 to be consistent with proposed changes elsewhere and is proposing other conforming amendments in 30 CFR parts 56, 57, 71, and 72.

Finally, MSHA is not proposing any changes to the respirable crystalline silica PEL, for all miners, of 50 micrograms per cubic meter of air ($\mu g/m^3$) for a full-shift exposure, or the action level of 25 $\mu g/m^3$ for a full-shift exposure, both calculated as an 8-hour time-weighted average (TWA), established in the 2024 Silica Final Rule. The changes from the 2024 Silica Final Rule that are proposed would clarify and improve mine operators' compliance requirements for respirable crystalline silica overexposure and improve respiratory protections and health protections for all miners. All references in this proposal to the "existing rule" refer to the provisions established in the 2024 Silica Final Rule.

II. Background

A. Pertinent Legal Authority

The statutory authority for this proposed rule is provided by the Federal Mine Safety and Health Act of 1977, as amended (Mine Act) under sections 101(a), 103(h), and 508. 30 U.S.C. 811(a), 813(h), and 957. MSHA implements the provisions of the Mine Act to prevent death,

illness, and injury from mining and promote safe and healthful workplaces for miners. The Mine Act requires the Secretary of Labor (Secretary) to develop and promulgate improved mandatory health or safety standards to prevent hazardous and unhealthful conditions and protect the health and safety of the nation's miners. 30 U.S.C. 811(a).

Congress passed the Mine Act to address these dangers, finding "an urgent need to provide more effective means and measures for improving the working conditions and practices in the Nation's coal or other mines in order to prevent death and serious physical harm, and in order to prevent occupational diseases originating in such mines." 30 U.S.C. 801(c). Congress concluded that "the existence of unsafe and unhealthful conditions and practices in the Nation's coal or other mines is a serious impediment to the future growth of the coal or other mining industry and cannot be tolerated." 30 U.S.C. 801(d). Accordingly, "the Mine Act evinces a clear bias in favor of miner health and safety." *Nat'l Mining Ass'n v. Sec'y, U.S. Dep't of Lab.*, 812 F.3d 843, 866 (11th Cir. 2016).

Section 101(a) of the Mine Act gives the Secretary the authority to develop, promulgate, and revise mandatory health standards to address toxic materials or harmful physical agents. 30 U.S.C. 811(a). Under Section 101(a), a standard must protect lives and prevent injuries in mines and be "improved" over any standard that it replaces or revises. *Id.* Additionally, Section 101(a)(9) prohibits the Secretary from promulgating a mandatory health or safety standard that reduces the protection afforded miners by an existing mandatory health or safety standard. 30 U.S.C. 811(a)(9). Section 101(a)(9) is also known as the "no-less protection rule," and courts have noted that "Section 101(a)(9) requires the agency to state the basis for its conclusion that the rule has been satisfied," but judicial "review of that substantive determination is, as always, 'highly deferential and presumes the validity of agency action."' *Nat'l Min. Ass'n v. Mine Safety & Health Admin.*, 116 F.3d 520, 535, 536 (D.C. Cir. 1997) (quoting *United Mine Workers of Am., Int'l Union v. Dole*, 870 F.2d 662, 666 (D.C. Cir. 1989)). Section 101(a) of the Mine Act also authorizes the Secretary to "prescribe the type and frequency of medical examinations or

other tests which shall be made available, by the operator at his cost, to miners exposed to such hazards in order to most effectively determine whether the health of such miners is adversely affected by such exposure." 30 U.S.C. 811(a)(7).

The Secretary must set standards to assure, based on the best available evidence, that no miner will suffer material impairment of health or functional capacity from exposure to toxic materials or harmful physical agents over their working lives. 30 U.S.C. 811(a)(6)(A). In developing standards that attain the "highest degree of health and safety protection for the miner," the Mine Act requires that the Secretary consider the latest available scientific data in the field, the feasibility of the standards, and experience gained under the Mine Act and other health and safety laws. *Id.* As a result, courts have found it "appropriate to 'give an extreme degree of deference'" to MSHA "'when it is evaluating scientific data within its technical expertise.'" *Nat'l Mining Ass'n*, 812 F.3d at 866 (quoting *Kennecott Greens Creek Mining Co. v. MSHA*, 476 F.3d 946, 954 (D.C. Cir. 2007)). Consequently, MSHA's "duty to use the best evidence and to consider feasibility . . . cannot be wielded as counterweight to MSHA's overarching role to protect the life and health of workers in the mining industry." *Id*. Thus, "when MSHA itself weighs the evidence before it, it does so in light of its congressional mandate" in favor of protecting miners' health. *Id.* Moreover, "the Mine Act does not contain the 'significant risk' threshold requirement" from the OSH Act. *Nat'l Mining Ass'n v. United Steel Workers*, 985 F.3d 1309, 1319 (11th Cir. 2021); *see also Nat'l Min. Ass'n v. Mine Safety & Health Admin.*, 116 F.3d 520, 527-28 (D.C. Cir. 1997) (contrasting the Mine Act at 30 U.S.C. 811(a) with the OSH Act at 29 U.S.C. 652 and noting that "[a]rguably, *this* language does not mandate the same risk-finding requirement as OSHA" and holding that "[a]t most, . . . [MSHA] was required to identify a significant risk associated with having no [relevant] standard at all").

Section 103(h) of the Mine Act gives the Secretary the authority to promulgate standards involving recordkeeping and reporting. 30 U.S.C. 813(h). Additionally, section 103(h) requires that every mine operator establish and maintain records, make reports, and provide this

information as required by the Secretary. *Id.* Section 508 of the Mine Act gives the Secretary the authority to issue regulations to carry out any provision of the Mine Act. 30 U.S.C. 957.

B. Regulatory History

On April 18, 2024, MSHA published the 2024 Silica Final Rule (89 FR 28218). The standalone documents, "*Effects of Occupational Exposure to Respirable Crystalline Silica on the Health of Miners*," "*Final Risk Analysis*," and "*Final Regulatory Impact Analysis,*" were also made publicly available at that time. MSHA set the PEL of respirable crystalline silica at 50 $\mu g/m^3$ for a full-shift exposure, calculated as an 8-hour TWA. The 2024 Silica Final Rule included other requirements for sampling, qualitative evaluations, corrective actions, and medical surveillance for MNM mines, and also included new requirements for respiratory protection, including the incorporation by reference of ASTM International (ASTM) F3387–19, *Standard Practice for Respiratory Protection*.

The final rule took effect on June 17, 2024. Compliance with the final rule was scheduled for April 14, 2025, for coal mine operators and April 8, 2026, for MNM mine operators. Following publication of the final rule, industry groups, including the National Stone, Sand and Gravel Association (NSSGA); the Sorptive Minerals Institute (SMI); and others, filed petitions in the United States Court of Appeals for the Eighth Circuit, asserting concerns regarding the rule's feasibility, control methods, and sampling requirements. On April 11, 2025, the Eighth Circuit Court of Appeals issued an order staying the 2024 Silica Final Rule's compliance deadlines until the Court completes a substantive review of the petition. In accordance with the judicial directive, MSHA continues to temporarily pause enforcement of the requirements in the 2024 Silica Final Rule for mine operators.

C. Developments Affecting MSHA's Provisions on Exposure Monitoring

In the 2024 Silica Final Rule, MSHA discussed its decision not to include an error factor for respirable crystalline silica sample results in its standards in response to several comments recommending the adoption of one (89 FR 28317). Commenters recommended that the PEL (30

CFR 60.10) and action level (30 CFR 60.2) should have an error factor to account for sampling and analysis errors. One commenter pointed to the 2014 Respirable Coal Mine Dust standard as an example of MSHA applying an error factor to the PEL to normalize results to account for errors in sampling and weighing that cause deviations in individual concentration measurements.

After careful consideration of these comments, MSHA decided not to include an error factor in the 2024 Silica Final Rule and based its findings on the following considerations: (1) there are many sampling devices available that conform to the ISO 7708:1995(E) standard for particle size-selective samplers with an acceptable level of measurement bias, and (2) both the X-Ray Diffraction (XRD) and Infrared Spectroscopy (IR) analytical methods can measure respirable crystalline silica with acceptable precision at amounts that would be collected by samplers when airborne concentrations are at or around the PEL and action level. Even though an error factor was not published in the 2024 Silica Final Rule, MSHA would have applied an error factor to any MSHA sample result, consistent with the NIOSH Accuracy Criterion and MSHA's long-standing practice, to determine whether the result was an overexposure of the PEL. This is similar to how the Agency applies an error factor to MSHA sample results of the P-2 and P-7 analyses for quartz at MNM and coal mines, respectively.

MSHA's decision not to mandate mine operators to use specific samplers or laboratories in the 2024 Silica Final Rule allows for variability among samplers and laboratory analysis methods. MSHA determined that additional restrictions on the types of samplers would create supply issues for operators because there are not enough of any one type of ISO-conforming sampling equipment to meet the sampling needs of all mines and many mine operators already had ISO-conforming sampling equipment that was being used for respirable crystalline silica sampling. Also, mine operators were concerned about facing significant delays in obtaining sample results, an issue which would have been exacerbated if MSHA had limited the laboratories available to operators by mandating that operators use specific ISO-accredited laboratories for sample analysis.

After publication of the 2024 Silica Final Rule, MSHA continued to receive questions during stakeholder meetings on whether an error factor would be applied to operators' samples. MSHA responded that the Agency, consistent with its practice of applying an error factor to sample results for other health hazards, would apply an error factor to MSHA respirable crystalline silica sample results but did not address whether operator samples for respirable crystalline silica would also have an error factor applied. Since the stakeholder meetings, MSHA observed variability in silica sample results when comparing different combinations of compliant pumps, samplers, laboratories, and analytic methods used. Specifically, the Agency observed more consistent results for MSHA samples, which are based on a single combination of pump, sampler, and laboratory.

MSHA is proposing in this rule to cite a violation of the respirable crystalline silica PEL only when the Agency has evidence that a violation occurred based on its own samples. Moreover, MSHA would determine that a violation has occurred when an MSHA sample, including an error factor adjustment of 21 percent, exceeds the PEL. MSHA's error factor model accounts for laboratory analyses variability and other sampling variables for samples taken by MSHA inspectors to ensure the Agency's process for its health standards citations and penalties is in accordance with the NIOSH Accuracy Criterion.[1] The error factor is necessary because when an MSHA sample is challenged, it allows the Secretary to show by a preponderance of the evidence that the sample is above the PEL.

MSHA is also proposing to apply an error factor adjustment of 21 percent to operator samples to determine compliance with the requirements of this part and for consistency across all samples, both operator and MSHA samples. While operator samples would not be cited for overexposure, there are still certain actions that operators must take based on their own sampling, such as corrective actions to reduce respirable crystalline silica exposures when sample results

[1] DHHS (NIOSH) Publication No. 95-117. National Institute for Occupational Safety and Health, "*Guidelines for Air Sampling and Analytical Method Development and Evaluation.*" May 1, 1995. https://stacks.cdc.gov/view/cdc/209677 (last accessed Jan. 7, 2026).

are above the PEL. For additional discussion of the error factor model and citing violations of the respirable crystalline silica PEL, see *Section IV.A.2.e. Paragraph (f)*.

Furthermore, the Agency is proposing that when mine operator samples are at or above the action level but at or below the PEL in § 60.12(a)(3), mine operators would also be required to provide approved respirators to miners. MSHA expects that providing miners with approved respirators, enrolling them in the proposed respiratory protection program in § 60.14 when any sample results indicate that miners are exposed to respirable crystalline silica at or above the action level but at or below the PEL, and sampling as frequently as necessary (as proposed in § 60.12) would improve miner safety. By providing miners with respirators in this instance, miners are informed and can take action to protect themselves from respirable crystalline silica exposures and possible overexposures by voluntarily wearing a respirator. However, MSHA emphasizes that nothing in the proposal changes the existing requirements for operators to take corrective actions and ensure miners wear approved respirators when working in exposures above the PEL.

Mine operators can continue to rely on sample results from ISO/IEC 17025-accredited laboratories, including the 21 percent error factor adjustment, to determine their compliance with the PEL and action level. Miners should be confident that the sample results, including the 21 percent error factor adjustment, provide them with appropriate measurements of their exposures to respirable crystalline silica. Mine operators may continue to use any type of sampling device they choose for respirable crystalline silica sampling as long as it meets the characteristics for respirable particle-size selective samplers that conform to the ISO 7708:1995(E) standard and, where appropriate, meets MSHA permissibility requirements.

III. Request for Comments

MSHA requests comments on any aspect of the proposed rule and all relevant issues. In addition, MSHA is considering some options that are not included as part of the current proposal. MSHA is soliciting comments on the following options:

- Incorporating a requirement that specifies coal mines must be at normal production volumes when conducting sampling;
- Whether there are alternative error factors for sample results that MSHA should consider for determining compliance with the respirable crystalline silica PEL and exposures at or above the action level;
- Whether the Agency should continue to apply separate error factors based on the analytical precision of the MSHA P-2 and MSHA P-7 analytical methods instead of a single, uniform 21 percent error factor;
- Removing the requirement to include respirable dust results as part of the sampling record;
- Whether the Agency should prohibit the use of irritant smoke as a qualitative respirator fit testing method due to the health risks associated with exposure to irritant smoke. OSHA allows irritant smoke fit testing in Appendix A to 29 CFR 1910.134;
- Additional modifications to the medical evaluation requirements for certain types of respirators or supplemental mining-specific requirements for unique circumstances found in mining environments;
- Tying voluntary medical examinations for MNM miners to exposure levels at or above the action level;
- Whether medical examinations for miners new to the MNM industry should be mandatory, but include additional flexibilities (e.g., X-rays without immediate examination by NIOSH-certified B Readers, or allowing use of the mine operator's pre-employment medical exams);
- Whether mandatory medical examinations should be required for sampled miners when mine operator samples, including the 21 percent error factor, are above the PEL;

- Whether to exempt respirable crystalline silica exposures that result from the mining and processing of sorptive clays; and
- Assumptions and methodologies of regulatory alternatives and data or quantitative information that may be useful in evaluating the estimated costs and benefits associated with regulatory alternatives.

MSHA will consider all timely comments and may change the proposed rule based on comments received.

IV. Section-by-Section Analysis

MSHA proposes to amend 30 CFR part 60, *Respirable Crystalline Silica*. Part 60 contains uniform mandatory health standards to protect all miners from adverse health risks caused by occupational exposure to respirable crystalline silica in MNM and coal mines. Part 60 contains the PEL for respirable crystalline silica for all mines and includes other provisions addressing methods of compliance, exposure monitoring, corrective actions, respiratory protection, medical surveillance for MNM mines, recordkeeping, and severability. MSHA also proposes to adopt by reference the requirements for respiratory protection from OSHA in § 1910.134 of title 29 of the Code of Federal Regulations (29 CFR 1910.134).

This section-by-section analysis discusses each change being proposed under Part 60, the proposed conforming amendments in 30 CFR parts 56, 57, 71, and 72, and the proposed update to MSHA's respiratory protection standard.

A. Part 60 – Respirable Crystalline Silica

Part 60 includes 10 sections: Scope and compliance dates; Definitions; Permissible exposure limit; Methods of compliance; Exposure monitoring; Corrective actions; Respiratory protection; Medical surveillance for metal and nonmetal mines; Recordkeeping requirements; and Severability. In the following sections, MSHA discusses each of the proposed amendments to Part 60.

1. Section 60.11 – Methods of compliance.

Existing § 60.11 requires mine operators to install, use, and maintain feasible engineering and administrative controls to keep each miner's exposure to respirable crystalline silica at or below the PEL. Mine operators must use feasible engineering controls as the primary means of controlling respirable crystalline silica; administrative controls must be used, when necessary, as a supplementary control.

Existing § 60.11(b) prohibits mine operators from using rotation of miners as an acceptable method of compliance for 30 CFR part 60.

MSHA proposes to amend existing paragraph (b) to clarify that mine operators are prohibited from using rotation of miners as a corrective action under existing § 60.13 when miners' exposures are above the PEL. MSHA thinks this clarification is necessary because many mine operators have indicated that they interpret existing paragraph (b) as a total prohibition against the rotation of miners for any reason when miners are exposed to respirable crystalline silica. Existing paragraph (b) was not intended to bar rotation of miners as an administrative control to reduce exposure to other hazards, or for other reasons. For example, operators rotate miners to limit noise exposure, prevent repetitive strain injuries, and reduce fatigue from strenuous tasks.

After consideration of the concerns raised by stakeholders, MSHA concluded that existing paragraph (b) may be difficult to enforce and may cause confusion for the regulated community. The language in existing paragraph (b) results in operator concern that rotation of miners that is typical in operations and implemented for safety or health reasons could be cited as rotation of miners to limit silica exposures. Existing paragraph (b) may inadvertently lead operators to not rotate miners when appropriate, neglecting other critical health and safety hazards. For instance, it might dissuade implementation of rotation to protect miners from excessive noise exposure and occupational hearing loss.

The proposed change would clarify that existing § 60.11(b) is intended to prohibit the rotation of miners as a corrective action for respirable crystalline silica exposure when exposures

are above the PEL. This means when exposure levels are above the PEL, operators may not use rotation of miners as a corrective action to bring silica exposures to levels at or below the PEL. Operators may continue to rotate miners in circumstances consistent with current normal work practices. Therefore, the proposed change would clarify that this section does not bar the use of miner rotation as deemed appropriate by the mine operator in circumstances such as, but not limited to, cross-training, allowing miners to alternate physically demanding tasks with less strenuous activities, or limiting exposure to other hazards for which rotation is a suitable corrective action (e.g., noise or musculoskeletal disorders). Operators may not, however, introduce any new or additional rotation for exposures to other hazards (that could result in additional miners working in conditions above the PEL) while corrective actions under § 60.13 are ongoing for an overexposure to silica.

The following examples help explain MSHA's position prohibiting rotation of miners to be used as a corrective action when exposures are above the PEL:

Example A: At a surface MNM mine, Miner 1 normally operates a haul truck for their entire 8-hour shift. If a silica sample result indicates an exposure above the PEL for Miner 1, MSHA would not allow the operator to rotate another miner for Miner 1 and run the haul truck for any amount of time for the purpose of reducing Miner 1's silica exposure during the shift, as this is not part of current normal work practices. Rather, if the exposure of Miner 1 is above the PEL, the MNM mine operator would be obligated to implement the corrective action for being above the PEL, to protect Miner 1.

Example B: At an underground coal mine, Miner 1 and Miner 2 rotate the duties of operating the continuous mining machine as part of their current normal work practice. If a silica sample result indicates an exposure above the PEL, MSHA would allow the coal mine operator to rotate Miner 1 and Miner 2 working on the continuous mining machine while taking corrective actions because this is part of their normal work practices. MSHA emphasizes that when a sample indicates exposures are over the PEL, under existing § 60.13, *Corrective actions*,

the operator must make approved respirators available to affected miners before the start of the next work shift in accordance with existing § 60.14(b) and (c) and ensure that affected miners wear respirators properly until miner exposures are at or below the PEL. In the example given above, both Miner 1 and Miner 2 would be considered affected, and the mine operator would be required to comply with the requirements of § 60.13 for both miners. MSHA also emphasizes that sampling under § 60.12(e)(2)(ii) requires coal operators to conduct occupational environmental sampling (i.e., the sampling device stays with the occupation during the rotation).

Example C: At a surface MNM mine, Miner 1 and Miner 2 normally rotate duties operating a stone cutting saw as an administrative control to reduce noise exposure. If a silica sample result indicates an exposure above the PEL, MSHA would allow the MNM mine operator to continue to rotate Miner 1 and Miner 2 operating the saw while taking corrective actions because this is part of their normal work practices. However, MSHA would not allow the mine operator to add Miner 3 to rotate with Miner 1 and Miner 2 for any amount of time operating the stone cutting saw in order to lower each miner's exposure below the PEL. MSHA emphasizes that when a sample indicates a miner's exposure over the PEL, under existing § 60.13, *Corrective actions*, the operator must make approved respirators available to affected miners before the start of the next work shift in accordance with existing § 60.14(b) and (c) and ensure that affected miners wear respirators properly until miner exposures are at or below the PEL. In the example given above, both Miner 1 and Miner 2 would be considered affected, and the mine operator would be required to comply with the requirements of § 60.13 for both miners. MSHA also emphasizes that sampling under § 60.12(e)(2)(i) requires MNM mine operators to conduct personal breathing-zone sampling (i.e., the sampling device stays with the individual). MSHA expects mine operators to conduct personal breathing-zone sampling on both miners in this example when assessing their exposures to respirable crystalline silica.

This proposed change to § 60.11(b) is consistent with the existing protections for miner safety and health in existing § 60.11 and is intended to clarify MSHA enforcement policy in the

Agency's standards. As discussed, amending this provision would not reduce protections afforded to miners as MSHA has consistently recognized that rotation is beneficial for miners' health and safety when used for purposes such as cross-training, alternating physically demanding tasks, or limiting exposure to other hazards like noise and musculoskeletal disorders when miners' exposures are at or below the respirable crystalline silica PEL.

2. Section 60.12 – Exposure monitoring.

Existing § 60.12 sets forth requirements for conducting respirable crystalline silica exposure monitoring, including requirements for sampling, corrective actions sampling, periodic evaluation, post-evaluation sampling, sampling requirements, methods of sampling analysis, and sampling records. The exposure monitoring requirements facilitate operator compliance with the PEL and standardize MSHA's approach to monitoring and evaluating respirable crystalline silica exposures to better protect miners' health.

Under this proposed rule, MSHA would amend the exposure monitoring requirements in existing § 60.12 to do the following: (1) amend the sampling structure to "as frequently as necessary", (2) amend the actions mine operators must take when miners' exposure is at or above the action level but at or below the PEL, (3) amend the actions mine operators must take when miners' exposure exceeds the PEL, (4) remove the requirements for periodic evaluation and post-evaluation sampling, (5) establish a uniform error factor adjustment of 21 percent on sample results for determining compliance with the PEL and for determining exposures at or above the action level, and (6) establish that MSHA would issue citations only for MSHA samples of respirable crystalline silica when laboratory analysis results indicate samples exceed the PEL.

a. Paragraph (a)

Existing § 60.12(a), *Sampling*, includes the requirements for sampling conducted by mine operators to assess miners' exposures to respirable crystalline silica. Samples are compared to the action level and the PEL to determine the effectiveness of existing controls and the need for additional controls.

Paragraph (a)(1)

In existing paragraph (a)(1), mine operators are required to commence sampling by the compliance date to assess the full shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica.

Under this proposed rule, MSHA would move the clause "to assess the full shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica" from existing paragraph (a)(1) to proposed paragraph (a)(2). Under existing paragraph (a)(1), MSHA does not propose to amend the existing requirement that mine operators must commence sampling by the compliance date in § 60.1.

Paragraph (a)(2)

Under existing paragraph (a)(2), mine operators must take certain actions when sampling is below the action level, at or above the action level but at or below the PEL, or above the PEL.

MSHA proposes to amend the sampling structure in § 60.12 from a periodic initial and quarterly frequency to an "as frequently as necessary" sampling structure that assesses actual or reasonably likely exposures at or above the action level.

MSHA expects the "as frequently as necessary" sampling structure to be familiar to mine operators because the proposed amendment would be consistent with MSHA's existing requirements for the control of miners' exposures to other health hazards, and the sampling structure could be quickly implemented by mine operators. For example, the proposed "as frequently as necessary" sampling structure is consistent with the existing MNM requirement to conduct dust, gas, mist, and fume surveys (sampling) as frequently as necessary to determine the adequacy of control measures (§§ 56.5002 and 57.5002). A similar sampling structure can also be found in the existing noise exposure assessment requirements for MNM and coal mines, which requires that mine operators establish a system of monitoring that evaluates each miner's noise exposure sufficiently to determine continuing compliance with the noise exposure

requirements (§ 62.110). The proposed sampling structure for respirable crystalline silica is also consistent with the existing MNM standard for controlling diesel particulate matter (DPM), which requires that mine operators monitor as often as necessary to effectively determine, under conditions that can be reasonably anticipated in the mine, whether the average personal full-shift airborne exposure to DPM exceeds the DPM limit (§ 57.5071(a)). MSHA's experience has shown that requirements for operators to conduct sampling "as frequently as necessary" are an appropriate means to determine the adequacy of control measures and protect miner health.

MSHA anticipates that under this proposal, mine operators might determine that some miners are not reasonably likely to be exposed to respirable crystalline silica at or above the action level and would therefore not conduct sampling for those miners. MSHA also anticipates that operators may identify certain miners and occupations requiring more frequent sampling than the initial and subsequent quarterly monitoring for exposures exceeding the action level, particularly when mining conditions, processes, or procedures change (e.g., geological factors or the effectiveness of engineering controls).

Mine operators could use objective data to help determine when to sample and what occupations or areas of a mine may need more frequent sampling to assess respirable crystalline silica exposures. This is consistent with the approach for sampling methods discussed in the 2024 Silica Final Rule, which assigned mine operators responsibility for determining which miners to sample for respirable crystalline silica exposures.

Objective data is information such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance that indicates the level of miner exposure to respirable crystalline silica associated with a specific product, material, process, task, or activity. Mine operators utilizing such data should verify that it represents mining conditions that either closely match, or present greater exposure potential than the processes, material types, control measures, work practices, and environmental conditions present in their current operations.

Some examples of objective data include historical MSHA sampling data, NIOSH Health Hazard Evaluations and other published scientific reports, and air monitoring data from industry-wide surveys that demonstrate miners' exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. At a minimum, mine operators relying on objective data should obtain objective data that is current and accurately characterizes miner exposures to respirable crystalline silica.

The 2024 Silica Final Rule did not adopt the proposed use of objective data to confirm sample results below the action level and discontinue sampling. However, the rule was silent on operator use of objective data to determine which miners are or may reasonably be expected to be exposed to respirable crystalline silica. MSHA has consistently recognized that mine operators are aware of the extent and degree of miners' exposures to respirable crystalline silica because they have been complying with respirable dust standards for over 40 years. Mine operators are also aware of the occupations, work areas, and work activities where exposures to respirable crystalline silica at or above the action level are most likely to occur.

Although not explicit in the 2024 Silica Final Rule, it was MSHA's understanding that operators would use their experience and all available data (including objective data) to determine which miners may reasonably be expected to be exposed to respirable crystalline silica. In this proposed rule, MSHA acknowledges the benefits of reviewing, analyzing, and determining the applicability of objective data for the purpose of making judgments about which miners are at risk of exposure at or above the action level for respirable crystalline silica. Objective data is valuable for helping mine operators decide where and when to focus sampling efforts, ensuring that monitoring is concentrated on miners who are at greater risk of exposure to respirable crystalline silica at or above the action level.

MSHA expects that the proposed change to an "as frequently as necessary" sampling structure does not reduce protections afforded to miners because it would provide more timely and targeted information about respirable crystalline silica concentrations in mining

environments. Mine operators would be expected to sample upon recognizing a change in mining conditions, practices, and procedures that could result in exposures at or above the action level, rather than waiting until the next 3-month sampling interval or qualitative assessment.

The proposed change to an "as frequently as necessary" sampling structure modifies specific sampling requirements in § 60.12 related to: (1) the action level trigger, (2) initial sampling and scope, (3) sampling frequency, and (4) discontinuation of sampling. The details of these changes are further described in the following paragraphs.

Action level trigger

Under the existing standards, when respirable crystalline silica sample results are at or above the action level but at or below the PEL, operators are required to conduct additional sampling within 3 months. Under the proposed rule, in addition to sampling as frequently as necessary, when miners are exposed at or above the action level but at or below the PEL, mine operators would be required to make approved respirators available before the start of the next work shift in accordance with § 60.14(b) and (c). Miners may choose to wear respirators voluntarily in this instance.

MSHA does not think it is appropriate to require only additional sampling on a set timeframe when sampling indicates exposure at or above the action level. Additional sampling alone does not reduce the health risks for miners. Therefore, the proposed requirement for operators to make approved respirators available by the beginning of the next work shift allows miners to take immediate action to reduce their exposure to respirable crystalline silica. Additionally, operators would be required to sample as frequently as necessary (rather than on a set 3-month timeframe) to determine whether discontinuing the provision of approved respirators is warranted. MSHA expects that these proposed changes would provide greater protection for miners' health than merely requiring additional sampling.

For additional details on the proposed requirement to make approved respirators available, please see the description of paragraph (a)(3) later in this section.

Initial sampling and scope

Under the existing standards, mine operators are required to commence sampling by the compliance date for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica. Under the proposed rule, the requirement to commence sampling by the compliance date would remain. Mine operators would conduct sampling "as frequently as necessary" after the compliance date. Also, under the proposed rule, mine operators would need to assess exposures for miners who are or may reasonably be expected to be exposed at or above the action level.

Due to the observed variability of silica sample results and MSHA's proposed application of an error factor on sample results, MSHA now considers that a silica exposure approaching the action level would be the appropriate concentration to commence sampling as frequently as necessary rather than a one-time initial sample of any miner reasonably expected to be exposed to silica. Generally, as silica concentration levels approach the limit of detection (LOD) and limit of quantification (LOQ) in measured results (which fall below the action level), the accuracy and precision of exposure assessments tend to diminish significantly.[2]

At these lower concentrations, the magnitude of measurement error increases, resulting in less reliable and less consistent data, which leads to decreased confidence in drawing accurate conclusions about exposure levels. Values below the quartz LOD of 2 μg for MNM samples analyzed using the MSHA P-2 method and below the quartz LOD of 3 μg for coal samples analyzed using the MSHA P-7 method are not technologically feasible because they are too

[2] In industrial hygiene, the limit of detection (LOD) is the lowest concentration of a substance that can be reliably detected (distinguished from zero or background noise), while the limit of quantification (LOQ) is the lowest concentration that can be measured with acceptable accuracy and precision. The LOQ is higher than the LOD. The values of LODs and LOQs for respirable crystalline silica samples depend on several factors, including the analytical method used (XRD or FTIR) and the silica polymorph analyzed (quartz, cristobalite, or tridymite). An analytical method LOQ may be referred to as a reporting limit (RL) or reliable quantitation limit (RQL).

small to reliably indicate the presence of respirable crystalline silica.[3, 4] Also, values below the quartz LOQ of 10 µg for both MNM samples analyzed using the MSHA P-2 method and coal samples analyzed using the MSHA P-7 are considered unreliable.[5] This is because the measured quartz mass below the LOQ, despite usually being detectable, is indistinguishable from instrument noise, resulting in high variability.

Because of these limitations, MSHA has determined that the existing requirement in § 60.12(a)(1) to sample each miner who is or may reasonably be expected to be exposed to respirable crystalline silica is not actually feasible for those miners whose exposures approach levels at or below the established method's quantification limits. The Agency considers that assessing exposures for miners who are or may reasonably be expected to be exposed at or above the action level, taking into account the error factor, will ensure the accuracy and precision of sample results so that miners and mine operators can be confident in measuring exposures to respirable crystalline silica.

By focusing monitoring efforts and resources on areas where silica concentrations approach the action level, the proposed rule better ensures that measurements are more dependable and protective actions are accurately targeted. This approach directs health and safety interventions toward miners facing the most significant risks from respirable crystalline silica exposure, enhancing overall protection.

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[3] The MSHA P-2 detection limit or LOD for quartz is 2 µg. See "*MSHA P-2: X-Ray Diffraction Determination of Quartz and Cristobalite in Respirable Metal/Nonmetal Mine Dust."* October 11, 2024. https://www.msha.gov/sites/default/files/Support_Resources/PUBLIC%20FINAL%20New_P2%202024.pdf (last accessed Jan. 7, 2026).

[4] The MSHA P-7 detection limit or LOD for quartz is 3 µg. See *"MSHA P-7: Infrared Spectroscopy Determination of Quartz in Respirable Coal Mine Dust."* October 11, 2024. https://www.msha.gov/sites/default/files/Support_Resources/PUBLIC%20FINAL%20New_P7%202024.pdf (last accessed Jan. 7, 2026).

[5] The MSHA P-2 and P-7 reporting limit or LOQ for quartz is 10 µg (October 11, 2024). The Agency's crystalline silica laboratories report only the quartz results that are greater than or equal to 10µg , which aligns with the lowest mass of the instrument calibration range. This calibration range is verified with each analysis to ensure accuracy and reliability. In addition, each laboratory instrument is tested annually with 10 µg prepared samples of NIST (National Institute of Standards and Technology) traceable standard reference material. These procedures guarantee that the reported quartz measurements are both accurate and precise, adhering to the NIOSH Accuracy Criterion for an unbiased method that measurements will fall within 25 percent of the true measurement 95 percent of the time.

MSHA expects that this proposed change would not diminish protections for miners because it would focus mine operator and MSHA resources on protecting miners who are at the greatest risk of respirable crystalline silica overexposure.

Sampling at least every 3 months (frequency)

Under the existing standards, mine operators must continue to sample at least every 3 months when sampling indicates that miner exposures are at or above the action level but at or below the PEL. Under the proposed rule, mine operators would no longer be required to sample at least every 3 months. Instead, mine operators would be required to continue sampling as frequently as necessary to assess the full-shift, 8-hour TWA exposure of respirable crystalline silica to each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level. Sampling frequency would be based on mine-specific conditions and mine operators would be expected to sample upon recognizing a change in mining conditions, processes, or procedures that could result in exposures at or above the action level.

MSHA anticipates that, in some instances, this proposed change would require more frequent operator sampling than the currently prescribed 3-month frequency, and in other instances less frequent operator sampling may be appropriate. For example, MSHA anticipates that operators may identify certain miners and occupations requiring more frequent sampling when mining conditions, processes, or procedures change due to geological conditions or changes in the effectiveness of engineering and administrative controls. MSHA expects that this proposed change would not reduce protection for miners because it requires sampling when conditions, processes, or procedures necessitate, rather than on a set frequency.

Discontinuation of sampling (two consecutive samplings below the action level)

Under the existing standards, mine operators may discontinue sampling (i.e., stop sampling on a regular 3-month frequency) when two consecutive sample results indicate that miners' exposures are below the action level. Under the proposed rule, the "as frequently as

necessary" sampling structure would require that mine operators sample as necessary to assess respirable crystalline silica exposures for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level. This is more protective because there is no "discontinuation" of sampling. Rather, mine operators would continue to evaluate their mines and sample those miners who are exposed or who may reasonably be expected to be exposed to respirable crystalline silica at or above the action level. MSHA expects that this proposed change enhances miner protection by requiring continual evaluation and sampling based on changing conditions, processes, and procedures at the mine instead of allowing operators to discontinue sampling based on two consecutive samples taken 3 months apart.

In existing paragraph (a)(2), MSHA also proposes to add that sampling shall be conducted "to assess the full shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica." This proposed amendment is an editorial change since it moves the requirement from existing paragraph (a)(1) to existing paragraph (a)(2).

MSHA proposes to delete existing paragraph (a)(2)(i) in its entirety. Existing paragraph (a)(2)(i) includes a requirement to take at least one additional sampling within 3 months when concentrations are below the action level. This proposed change corresponds with the previously described "as frequently as necessary" sampling structure.

MSHA proposes to delete existing paragraph (a)(2)(ii) in its entirety. Existing paragraph (a)(2)(ii) includes a requirement for additional sampling within 3 months when concentrations are at or above the action level but at or below the PEL. This proposed change corresponds with the previously described "as frequently as necessary" sampling structure.

MSHA proposes to delete existing paragraph (a)(2)(iii) in its entirety. Existing paragraph (a)(2)(iii) includes a requirement for taking corrective actions and sampling pursuant to

§ 60.12(b) when concentrations are above the PEL. MSHA considers this requirement to be redundant because these requirements are covered under existing § 60.12(b) and § 60.13.

Paragraph (a)(3)

In existing paragraph (a)(3), mine operators are required to continue to sample within 3 months of the previous sampling when the most recent sampling analyses show concentrations at or above the action level but at or below the PEL.

MSHA proposes that when sample results reveal concentrations at or above the action level but at or below the PEL, mine operators must "make approved respirators available before the start of the next work shift in accordance with § 60.14(b) and (c)." This proposal provides miners with additional protection from respirable crystalline silica and thereby limits the health effects associated with respirable crystalline silica exposures until conditions, processes, or procedures change and sampling indicates exposures are below the action level. Because of the recently observed variability in silica sample results and the associated potential health risks, MSHA considers that it is safer to provide miners with respirators in conjunction with conducting sampling as frequently as necessary to protect miners' health. MSHA notes that the proposal does not allow mine operators to simply provide respirators while neglecting other protective measures. Mine operators would still be required to implement engineering and administrative controls to maintain silica levels below the PEL and conduct sampling as frequently as necessary. However, instead of relying solely on sampling, the Agency aims to equip miners with respirators as an additional and immediate protective measure because exposure levels at or above the action level indicate that miners might be working in concentrations near the PEL. This approach provides an added layer of protection aligned with the hierarchy of controls and ensures that miners are effectively safeguarded against harmful silica exposures.

This proposed change is also consistent with existing coal standards for respirable coal mine dust (RCMD) in §§ 70.208(e)(1), 70.209(c)(1), 71.206(h)(1) and 90.207(c)(1). Under these

existing standards, coal mine operators must make approved respiratory equipment available when one valid RCMD sample, out of the 5 or 15 samples that coal mine operators routinely collect during quarterly sampling, exceeds the excessive concentration value (ECV). In this case, the mine operator is considered to be compliant with the standards because the number of samples in excess of the ECV is less than the number of samples that are noncompliant with the standard. MSHA considers this situation analogous to when mine operators' respirable crystalline silica sample results reach the action level under this proposed rule, as they are not out of compliance with the PEL, but would be required to provide respirators to protect miners' health as exposure levels approach the PEL.

In existing paragraph (a)(3), MSHA also proposes to change the requirement from "continue to sample within 3 months of the previous sampling" to "until sampling indicates exposures are below the action level" in proposed paragraph (a)(3). This proposed change corresponds to the previously described "as frequently as necessary" sampling structure.

Paragraph (a)(4)

In existing paragraph (a)(4), mine operators may discontinue sampling when two consecutive samplings indicate that miner exposures are below the action level. Existing paragraph (a)(4) also states that the second sampling must be taken after the operator receives the results of the prior sampling but no sooner than 7 days after the prior sampling was conducted.

MSHA proposes to remove existing requirements in paragraph (a)(4) in their entirety because it is unnecessary. In the interest of protecting miners' health, MSHA would no longer allow mine operators to discontinue sampling (see the discussion of discontinuation of sampling presented in the description of paragraph (a)(2) earlier in this section).

MSHA proposes to add a requirement for mine operators to immediately report all sample results conducted pursuant to proposed paragraph (a)(2) that show concentrations above the PEL, to the appropriate District Manager or other MSHA official designated by the District Manager. This proposed change is editorial, as it moves the requirement from existing paragraph

(b) to paragraph (a)(4). MSHA also notes that when sample results show concentrations above the PEL, the mine operator would still be required to make approved respirators available to affected miners before the start of the next work shift under existing § 60.13(a)(1). MSHA is not proposing to change the respirator requirement in § 60.13(a)(1).

b. Paragraph (b)

Existing § 60.12(b), *Corrective actions sampling*, requires that where the most recent sampling indicates that miner exposures are above the PEL, the mine operator must conduct sampling after corrective actions are taken, and until sampling indicates that miner exposures are at or below the PEL. The existing requirements do not define a specific sampling frequency when concentrations are above the PEL, but MSHA anticipates that operators will sample once they have taken corrective actions and continue to sample as frequently as needed until corrective actions have resolved the overexposure. Under existing § 60.12(b) MSHA also requires that mine operators immediately report all operator samples above the PEL to the District Manager or to any other MSHA official designated by the District Manager.

MSHA proposes to amend existing paragraph (b) of § 60.12 to remove the requirement to immediately report all operator samples above the PEL since that requirement is now added to proposed paragraph (a)(4) as described previously.

Additionally, MSHA proposes to amend paragraph (b) to add the requirement that once operator sampling (conducted as frequently as necessary) indicates that miner exposures are at or below the PEL, the mine operator would be required to contact the MSHA District Manager or any other MSHA official designated by the MSHA District Manager.

This proposed follow-up notification requirement ensures that MSHA is informed once the operator has successfully implemented sufficient corrective actions to reduce concentrations below the PEL. Requiring timely communication after exposure levels are reduced enhances miner safety and health by allowing MSHA to verify that effective protective measures are in place and maintained to prevent future overexposures. Pursuant to the proposed change in

§ 60.12(b), once the mine operator achieves a sample result below the PEL and reports the sample result to MSHA, the mine operator would not be required to continue reporting every subsequent sample result indicating exposures are at or below the PEL.

c. Paragraphs (c) and (d)

Existing § 60.12(c), *Periodic evaluation*, establishes the requirements for mine operators to conduct periodic evaluations at least every 6 months or whenever there is a change in mining conditions, processes, or procedures, make a record of the periodic evaluations, and conduct post-evaluation sampling of those miners who, as a result of the periodic evaluation, were identified as potentially being exposed at or above the action level. Periodic evaluations support mine operator assessments of changing processes, conditions, and procedures that may impact miner exposure levels on a regular basis. Under existing § 60.12(d), *Post-evaluation sampling*, the mine operator shall conduct sampling if they determine that miners may be exposed to respirable crystalline silica at or above the action level as a result of a change in processes or conditions at the mine.

In this proposed rule, MSHA would remove existing paragraphs (c) and (d) in their entirety. MSHA expects that there is no longer a need for periodic evaluation and post-evaluation sampling because the proposed change to an "as frequently as necessary" sampling structure makes these requirements redundant, and considers existing paragraphs (c) and (d) equivalent to the "as frequently as necessary" sampling required under proposed paragraph (a)(2). MSHA's intent is that the proposed "as frequently as necessary" requirement would require mine operators to evaluate potential exposures any time changes in conditions, processes, and procedures at the mine could reasonably result in exposures at or above the action level, and to sample, as needed, based on those evaluations. The evaluations and sampling prescribed in existing paragraphs (c) and (d) are inherent to the "as frequently as necessary" approach of this proposal. Removing them would clarify the overall sampling scheme.

MSHA expects that under the proposed "as frequently as necessary" sampling structure mine operators would continually evaluate their mines for the same conditions that triggered a periodic evaluation under existing paragraph (c): changes in production, processes, installation and maintenance of engineering controls, installation and maintenance of equipment, administrative controls, or geological conditions. This targeted, continual approach is intended to be as protective for miners as the existing requirements for conducting periodic evaluations at least every 6 months or whenever there is a change in processes or conditions at the mine.

The proposed change to an "as frequently as necessary" sampling structure resolves the concerns raised by stakeholders about the frequency of qualitative evaluations in the existing standards in paragraphs (c) and (d). As described in the 2024 Silica Final Rule, the United Mine Workers of America (UMWA) stated that mine operators should be constantly conducting qualitative evaluations any time a change occurs that may reasonably be expected to result in new or increased respirable crystalline silica exposures. The UMWA and the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) stated the proposed evaluation requirement could create the possibility for miners to be exposed to dangerous levels of silica for up to 6 months. Also, the National Stone, Sand & Gravel Association (NSSGA) stated that MSHA should adopt OSHA's requirement to reassess respirable crystalline silica exposures whenever there has been a change that may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred and eliminate the 6-month qualitative evaluation requirement (89 FR 28327). In this proposed rule, MSHA's proposed change to sampling "as frequently as necessary" addresses these stakeholder concerns because mine operators would be expected to continually evaluate changes in mining conditions, processes, and procedures to determine where and how frequently to conduct respirable crystalline silica sampling.

MSHA proposes to make editorial changes by redesignating subsequent paragraphs in § 60.12: existing paragraph (e), *Sampling requirements*, is proposed to be redesignated as paragraph (c); existing paragraph (f), *Methods of sample analysis*, is proposed to be redesignated as paragraph (d); and existing paragraph (g), *Sampling records*, is proposed to be redesignated as paragraph (e).

d. Paragraph (e)

Existing § 60.12(e), *Sampling requirements*, (redesignated as paragraph (c) in this proposed rule) includes sampling requirements to ensure mine operators' respirable crystalline silica monitoring is representative of miners' actual exposure levels. Because of the proposed removal of existing paragraphs (c) and (d) described previously, MSHA proposes to redesignate paragraphs (e)(1) through (e)(4) as paragraphs (c)(1) through (c)(4). In addition, MSHA proposes to change the language in redesignated (c)(3) from "in paragraphs (a) through (e) of this section" to "in paragraphs (a) through (c) of this section."

Existing § 60.12(e)(1) (redesignated as paragraph (c) in this proposed rule), discusses requirements for sampling to be conducted "during typical mining activities." Consistent with §§ 70.208, 70.209, 71.206, and 90.207, MSHA is considering incorporating a requirement, not currently included in the proposal, that specifies coal mines must be at normal production volumes when sampling under § 60.12(e). MSHA requests comment on whether this clarification would be beneficial.

e. Paragraph (f)

Existing § 60.12(f), *Methods of sample analysis* (redesignated as paragraph (d) in this proposed rule), specifies the methods to be used for analyzing respirable crystalline silica samples, including the qualifications of the laboratories where the samples are to be analyzed (under existing paragraph (f)(1)) and the specific analytical methods to be used (under existing paragraph (f)(2)). MSHA does not propose to change the existing requirements under existing paragraph (f)(1) or (f)(2).

In this proposed rule, MSHA would add a new paragraph designated as paragraph (d)(3) to clarify that an error factor of 21 percent would be applied to sample results when determining compliance with the PEL and when determining exposures at or above the action level. The error factor would be applied to full-shift, 8-hour TWA sample results of respirable crystalline silica. The proposed addition of new paragraph (d)(3) clarifies MSHA's enforcement position and procedure for determining compliance with the respirable crystalline silica PEL and exposures at or above the action level. MSHA will continue to evaluate the error factor as the accuracy of sampling technology or laboratory methodology improve to determine if the error factor should be changed to reflect such improvements. Following such evaluation, MSHA will use the appropriate rulemaking process to amend the error factor.

Applying an error factor to sample results is consistent with current MSHA enforcement policies for other airborne contaminants and health hazards.[6] As discussed in the May 1, 2014, final rule "*Lowering Miners' Exposure to Respirable Coal Mine Dust, Including Continuous Personal Dust Monitors*" (Coal Dust Rule, 79 FR 24814), MSHA addresses uncertainty due to measurement error by applying a margin of error before issuing a finding that the applicable standard was exceeded (79 FR 24972). Applying this margin of error ensures that noncompliance determinations are made only when there is at least 95 percent confidence that the applicable standard has been exceeded. To achieve this confidence level, the applicable margin of error is constructed by applying an error factor appropriate for the measurement being considered. For respirable coal mine dust, the error factor is calculated as: $EF = 1 + (1.645 \times CV_{total})$, where CV_{total} is the total coefficient of variation. Therefore, when $CV_{total} = 7.8$ percent for respirable coal mine dust sample measurements, the calculated value of EF is 1.128. If, for example, the sampled occupation is on a 1.5 milligrams per cubic meter of air (mg/m^3) standard, the operator

[6] MSHA Handbook Number: PH20-V-4, "*Health Inspection Procedures Handbook*." December 2020. https://www.msha.gov/sites/default/files/Directive%20%26%20Guidance/Handbooks/PH20-V-4%20Health%20Inspection%20Procedures%20Handbook.pdf (last accessed Jan. 7, 2026).

would be in violation of the applicable standard if a single, full-shift MRE-equivalent concentration measurement times the EF exceeds 1.692 mg/m^3.[7]

Another example is MSHA's use of an error factor when assessing compliance with the Agency's occupational noise standard in 30 CFR part 62. This standard allows, in part, a maximum noise PEL of 90 dBA (A-weighted decibels), corresponding to 100 percent of allowable exposure (or 100 percent dose), for an 8-hour period. MSHA considers noise exposures to be noncompliant when the noise standard, adjusted for the error factor, is exceeded.[8] Most noise exposures at mining operations vary in level and frequency during a working shift. MSHA measures personal noise exposure with a noise dosimeter with an attached microphone worn near the miner's ear for a full shift. The noise dosimeter has a 2 dBA (32 percent) range of uncertainty, or error.[9] MSHA applies this error in its determination of compliance by issuing citations for excessive noise exposure only when the exposure, as measured with a dosimeter, exceeds the standard including the error factor, which corresponds to 132 percent for the PEL exposure level.

The application of an error factor to sample results is also consistent with the treatment of measurement uncertainties at OSHA. OSHA's approach of accounting for sampling and analytical error (SAE) in its enforcement of PELs includes the OSHA silica PEL.[10] As described in the OSHA Technical Manual, the sample result being analyzed by OSHA's lab must exceed the PEL by more than the PEL multiplied by the SAE to be considered as an overexposure.[11] For

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[7] 1.5 × 1.128 = 1.692.
[8] MSHA Program Policy Manual Volume III (30 CFR Parts 40 through 50 and Parts 62 and 100), https://www.msha.gov/sites/default/files/Directive%20%26%20Guidance/Manuals/PPM-Vol-III.pdf (last accessed Mar. 12, 2026).
[9] MSHA Health Hazard Information Card, April 2006, https://www.msha.gov/sites/default/files/Alerts%20and%20Hazards/HH%20Cards/HH-15%20Hazards%20of%20Noise.pdf (last accessed Mar. 12, 2026).
[10] OSHA FAQ - Occupational Exposure to Respirable Crystalline Silica 29 C.F.R. § 1910.1053 - question # 21 (How does OSHA take into account the SAE when evaluating compliance with the PEL?) https://www.osha.gov/silica-crystalline/general-industry-info#:~:text=The%20standard%20requires%20employers%20to,or%20a%20scheduled%20monitoring%20option (last accessed Feb. 18, 2026).
[11] Section II, Chapter 1, IV.D of the OSHA Technical Manual (OSHA Instruction TED 01-00-015), https://www.osha.gov/dts/osta/otm/otm_ii/otm_ii_1.html (last accessed Mar. 11, 2026).

example, given the OSHA silica PEL of 50 μg/m^3 and assuming an SAE of 17 percent, an air sample result greater than 58.5 μg/m^3 is considered as exceeding the PEL.[12] This policy gives employers the benefit of the doubt because it assumes that a sample result that is above the PEL, but below the PEL adjusted for the SAE (*i.e.*, PEL + (PEL x SAE)), is not a violation of the standard. OSHA does not cite an employer for a violation of the exposure limit unless the Agency has obtained a sample measurement that is above the PEL after accounting for SAE.

Use of an error factor is also consistent with NIOSH's identification of error in validated sampling and analytical methods. The NIOSH Manual of Analytical Methods (NMAM) is a compilation of analytical methods used for occupational exposure assessments.[13] The NMAM presents various analytical methods, including the NIOSH 7500, 7602, and 7603 methods used for silica analysis, and each method lists its respective analytical error. Given the variability MSHA observed in silica sample results, MSHA considers incorporating an error factor directly into the standards to be consistent with sound scientific principles and MSHA's long-standing enforcement practices. It will also ensure consistency, uniformity, and clarity for miners, mine operators, and the Agency in evaluating respirable crystalline silica exposure levels.

Existing § 60.12(f) requires operators to follow specific requirements for respirable crystalline silica sampling. For example, samples must be collected using respirable-particle-size-selective samplers that conform to the ISO 7708:1995(E) standard. Operators must also select a laboratory for analysis of their respirable crystalline silica samples that is accredited to the ISO/IEC 17025 standard. In addition, operators must select a laboratory that evaluates all samples collected and submitted for analysis for compliance with existing MSHA standards related to respirable crystalline silica exposure, using a respirable crystalline silica analytical

[12] 50 + (50 x 0.17) = 58.5.
[13] NIOSH Manual of Analytical Methods (NMAM), 5th Edition, https://www.cdc.gov/niosh/nmam/pdf/NMAM_5thEd_EBook-508-final.pdf, February 2020 (last accessed Mar. 12, 2026).

method specified by one of three entities: MSHA, NIOSH, or OSHA. MSHA does not propose to amend these requirements.

However, MSHA recognizes that any measurement process has inherent variabilities caused by sampling and analytical error. Such variabilities cause individual measurements to deviate above or below a true value by a random but statistically quantifiable amount. The magnitude of the deviation or error depends on the sampling method and analysis technique used. The accuracy of a measurement depends on both precision and bias (NIOSH, 1995). Precision refers to consistency or repeatability of results, while bias refers to a systematic error that is present in every measurement. The NIOSH Accuracy Criterion establishes a standard for acceptance of dependable analytical methods that accurately reflect real workplace exposures. It requires that measurements consistently fall within a specified percentage of the true concentration, setting a maximum acceptable limit for precision and bias errors combined.

For unbiased sampling and analytical methods, a standard statistic called the coefficient of variation (CV) is used to determine if the method meets the NIOSH Accuracy Criterion. The CV, which is expressed as either a fraction (e.g., 0.05) or a percentage (e.g., 5 percent), quantifies measurement accuracy for an unbiased method. An unbiased method meets the NIOSH Accuracy Criterion if the "true" CV is no more than 0.128 (12.8 percent). However, because it is not possible to determine the true CV with 100 percent confidence, the NIOSH Accuracy Criterion requires 95 percent confidence that measurements by the method fall within 25 percent of the true concentration 95 percent of the time. Stated in mathematically equivalent terms, an unbiased method meets the NIOSH Accuracy Criterion if there is 95 percent confidence that the true CV is less than or equal to 0.128 (12.8 percent).

For MSHA silica sampling, the MSHA laboratory calculates the relative standard deviation (RSD) to define the CV for health enforcement samples. The RSD is also known as the total coefficient of variation (CV_{total}). For respirable crystalline silica analysis, MSHA calculates

the RSD using three components: (1) analysis precision, (2) sampling pump (flow rate) error, and (3) sampler error.

MSHA analyzes respirable crystalline silica samples using two primary analytical methods: (1) the MSHA P-2 method, *P-2: X-Ray Diffraction Determination Of Quartz And Cristobalite In Respirable Metal/Nonmetal Mine Dust* (analysis by X-ray diffraction, XRD) for MNM mines, and (2) the MSHA P-7 method, *P-7: Determination Of Quartz In Respirable Coal Mine Dust By Fourier Transform Infrared Spectroscopy* (analysis by infrared spectroscopy, FTIR or IR) for coal mines. Both of MSHA's silica methods pass the NIOSH Accuracy Criterion; that is, they measure exposures within 25 percent of the true value 95 percent of the time. The MSHA P-2 method has a higher RSD (11 percent analytical error) compared to the MSHA P-7 method (5.3 percent analytical error).[14, 15] MSHA is proposing to use the 11 percent value for the analysis precision component of the RSD under this proposed rule. For the sampling pump (flow rate) error component, MSHA is proposing to use a general value of 5 percent, which is consistent with the acceptable variation limits recognized by both OSHA and MSHA for the flow rate of personal air sampling pumps.[16, 17] For the sampler error component, MSHA is proposing to use a general value of 4.8 percent. This value is selected because the existing provision in § 60.12(e)(4) allows mine operators to use any sampling device that complies with the ISO 7708:1995(E) standard, and while a wide range of compliant samplers are available on the market, there are limited precision data available for many of them. Considering this data limitation, MSHA is proposing to use a single, uniform 4.8 percent value corresponding

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[14] The MSHA P-2 analytical error is 11 percent. See "*MSHA P-2: X-Ray Diffraction Determination of Quartz and Cristobalite in Respirable Metal/Nonmetal Mine Dust."* October 11, 2024. https://www.msha.gov/sites/default/files/Support_Resources/PUBLIC%20FINAL%20New_P2%202024.pdf (last accessed Jan. 7, 2026).

[15] The MSHA P-7 analytical error is 5.3 percent. See *"MSHA P-7: Infrared Spectroscopy Determination of Quartz in Respirable Coal Mine Dust."* October 11, 2024. https://www.msha.gov/sites/default/files/Support_Resources/PUBLIC%20FINAL%20New_P7%202024.pdf (last accessed Jan. 7, 2026).

[16] OSHA Method Guideline 1, "*Sampling and Analytical Methods*." May 10, 2024. https://www.osha.gov/sites/default/files/sampling-and-analytical-methods1.pdf (last accessed Jan. 7, 2026).

[17] MSHA Handbook Number: PH20-V-4, "*Health Inspection Procedures Handbook*." December 2020. https://www.msha.gov/sites/default/files/Directive%20%26%20Guidance/Handbooks/PH20-V-4%20Health%20Inspection%20Procedures%20Handbook.pdf (last accessed Jan. 7, 2026).

to the error associated with the sampling device the Agency uses for health enforcement sampling.

Combining these three components—11 percent for analysis precision, 5 percent for sampling pump error, and 4.8 percent for sampler error—gives a total RSD of 13.0 percent.[18] Applying this RSD to calculate the one-sided 95 percent upper confidence limit (UCL) results in a value of 21.385 percent.[19] The corresponding error factor is 1.21385, or 1.21 when rounded (i.e., 21 percent error factor).[20]

MSHA is proposing in new paragraph (d)(3) to apply a single, constant error factor of 21 percent to sample results when determining compliance with the respirable crystalline silica PEL and exposures at or above the action level. The proposed 21 percent value would be used regardless of the sampling equipment, laboratory, or analytical method used for the sample, and regardless of whether the sample is collected by MSHA or taken by the operator. MSHA considers that 21 percent is an appropriate value that is consistent with MSHA's current enforcement policy and sampling program for determining compliance with other respirable dust samples, with at least a 95 percent statistical confidence.

MSHA is seeking comments and data from stakeholders on the application and implementation of a 21 percent error factor and whether there are alternative error factors that MSHA should consider for determining compliance with the respirable crystalline silica PEL and exposures at or above the action level. In addition, MSHA requests comments on whether the Agency should continue to apply separate error factors based on the analytical precision of the MSHA P-2 and MSHA P-7 analytical methods instead of a single, uniform 21 percent error factor.

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[18] $\sqrt{(11^2 + 5^2 + 4.8^2)} = 13.0$. This is equivalent to the sampling and analytical error specified for the MSHA P-2 method.

[19] 13.0 x 1.645 = 21.385. The 1.645 value is the z-statistic that corresponds to a 95 percent confidence level for a single-sided (one-tailed) confidence interval.

[20] 1 + 0.21385 = 1.21385.

MSHA proposes to add a second new paragraph to existing § 60.12, designated as paragraph (d)(4), to state that MSHA would only issue citations for noncompliance with the PEL based on MSHA respirable crystalline silica samples. MSHA would not issue a citation under this proposed rule based solely on an operator-reported sample result that exceeds the PEL. MSHA inspector samples are obtained and analyzed under conditions within the Agency's control, and those samples are the only ones that will be used to issue citations. However, operator sample results may be used to determine the operator's compliance with other provisions of the respirable crystalline silica standards (e.g., reporting operator samples above the PEL to MSHA under existing § 60.12 and taking certain corrective actions in accordance with existing § 60.13(a)(1) through (3)).

*f. Paragraph (*g)

Existing § 60.12(g), *Sampling records*, (redesignated as paragraph (e) in this proposed rule), requires mine operators to create and post a record for each sample taken. Because of the proposed removal of existing paragraphs (c) and (d), MSHA proposes to make a related editorial change to paragraph (g) (redesignated as paragraph (e)) to change the language from "in paragraphs (a) through (e) of this section" to "in paragraphs (a) through (c) of this section."

Existing § 60.12(g) requires mine operators to make and post a record that includes both the concentrations of respirable crystalline silica and of respirable dust for each operator sample taken. During stakeholder meetings to discuss the implementation of the 2024 Silica Final Rule, mine operators voiced confusion over inclusion of the respirable dust concentration in the record because 30 CFR part 60 does not regulate respirable dust. Additionally, coal mine operators raised concern about confusion between the respirable dust concentration results under Part 60 and the respirable dust concentration sampling requirements under 30 CFR parts 70, 71, and 90, given that respirable dust sample results under Part 60 rely on different methodology and equipment. MSHA understands that respirable dust concentrations may not always be included in the laboratory report that operators receive for analysis of respirable crystalline silica samples.

MSHA is maintaining the requirement to include respirable dust concentrations as part of the sampling record in this proposal but is requesting additional stakeholder input on removing the requirement.

3. Section 60.14 – Respiratory protection.

Existing § 60.14 establishes the requirements for the use of respiratory protection for respirable crystalline silica.

a. Paragraph (a)

Existing § 60.14(a), *Temporary use of respirators at metal and nonmetal mines*, states that when MNM miners must work in concentrations of respirable crystalline silica above the PEL while engineering controls are being developed and implemented or it is necessary by the nature of the work involved, the mine operator shall use respiratory protection as a temporary measure.

MSHA proposes to amend paragraph (a) to remove the term "temporary measure" and replace it with "miners may work for reasonable periods of time." Thus, proposed paragraph (a) would allow affected miners to work for a reasonable period of time using respiratory protection in concentrations of respirable crystalline silica above the PEL while engineering controls are being developed and implemented, or it is necessary by the nature of the work involved. MSHA also proposes to remove the word "temporary" from the paragraph (a) heading to be consistent with the removal of the term "temporary measure" from the text of the paragraph. MSHA proposes to make these changes for clarity.

After publication of the 2024 Silica Final Rule, MSHA became aware that many mine operators interpreted "temporary" to mean a fixed period of time. Additionally, several stakeholders requested that MSHA clarify the meaning of "temporary" and specify time limitations.

In the 2024 Silica Final Rule, the Agency intended for "temporary" use of respirators in exposures above the PEL to mean miners could work in exposures above the PEL for reasonable

periods of time depending on the work being performed, or when developing and implementing engineering controls (89 FR 28336). For example, MSHA expects that respirators could be used for a longer period of time in exposures above the PEL if installing several, complex engineering controls; however, MSHA would expect that respirators would likely be worn for a shorter duration in exposures above the PEL when installing fewer, less complex engineering controls. Another instance where the Agency would anticipate longer respirator use is when a miner conducts scheduled maintenance on baghouse filters, as opposed to making a quick entry into the baghouse for a visual equipment inspection.

Other examples where respirators could be used for reasonable periods of time are when miners are tasked with cleaning a large material spill or circumstances where other applicable laws require a process to be confined to prevent releases of material to the environment, and working within such spaces may necessitate a respirator to control exposure. Also, transient events such as high wind might increase concentrations temporarily, and respirator use might be appropriate to manage exposure in such situations.

Thus, MSHA proposes the change in existing § 60.14(a) to clarify for stakeholders that the use of respirators is not dependent on a specific time limit but is instead determined to be reasonable based on the nature of the work affected miners are performing while wearing respirators given the variability of mining processes, activities, and commodities that are mined. In addition, MNM mine operators should be familiar with the proposed change since the statement that "miners may work for reasonable periods of time" if they are protected by appropriate respiratory protective equipment when working in concentrations of respirable crystalline silica above the PEL was in the previous standard in §§ 56.5005 and 57.5005 before the 2024 Silica Final Rule. The proposed changes would continue to limit the use of respirators while affected miners work in respirable crystalline silica exposures above the PEL, and the Agency expects that the proposed changes would not result in any reduction in safety for miners.

b. Paragraph (c)

Existing § 60.14(c), *Respiratory protection requirements at all mines*, sets forth the requirements for respiratory protection at MNM and coal mines. Existing paragraph (c)(2) requires that when approved respirators are used, mine operators must have a written respiratory protection program in accordance with ASTM F3387–19, "Standard Practice for Respiratory Protection."

MSHA proposes to revise paragraph (c)(2) to require mine operators to comply with the respiratory protection requirements from OSHA in 29 CFR 1910.134 (OSHA Respiratory Protection Standard). MSHA would adopt by reference the requirements of 29 CFR 1910.134, *Respiratory protection*, in this section in proposed paragraphs (c)(3)(i) and (ii), with two exclusions.

The first proposed exclusion in paragraph (c)(3)(i) would be for 29 CFR 1910.134(d)(2)(iii), the altitude exceptions for respirators for Immediately Dangerous to Life and Health (IDLH) atmospheres. Under 29 CFR 1910.134 (d)(2)(iii), all oxygen-deficient atmospheres are considered IDLH. OSHA permits exceptions based on altitude ranges which are listed in Table II to paragraph (c). Instead of adopting these altitude exceptions, MSHA proposes to continue its longstanding practice of classifying all atmospheres below 19.5 percent oxygen as IDLH and would not permit altitude adjustments for oxygen concentrations. MSHA proposes not to adopt this exception because mining operations are inherently unpredictable, with conditions that can rapidly become life-threatening. Additionally, MSHA's approach to IDLH atmospheres is consistent across all mines and is easily implemented by mine operators to ensure miners' safety and health. For a more detailed discussion of this IDLH exclusion, see *Section IV. C. Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134*.

The second proposed exclusion in paragraph (c)(3)(ii) would be for the record retention period for medical evaluations under OSHA's Respiratory Protection Standard in 29 CFR

1910.134(m)(1), which is for the duration of the miner's employment plus 30 years. MSHA is proposing to exclude the OSHA retention period because it is not enforced under 29 CFR 1910.134 but rather 29 CFR 1910.1020; therefore, the record retention period would not be adopted by reference in this proposal.

c. Paragraph (d)

Under a new proposed paragraph (d), MSHA would add a record retention requirement for medical evaluations of miners to determine a miner's ability to wear a respirator. This is not a new record retention requirement because both ASTM F3387-19 and the OSHA Respiratory Protection Standard require retention of medical evaluation records as part of a written respiratory protection program. MSHA is proposing the record retention requirement in this section so that mine operators would not have to follow OSHA's record retention requirements in 29 CFR 1910.1020. Thus, in proposed paragraph (d), MSHA would require the mine operator to maintain a record of the medical evaluation received from the physician or other licensed health care professional (PLHCP) or specialist under paragraph (c) of this section.

d. Voluntary Respirator Use

Under proposed § 60.12(a)(3), mine operators would be required to provide approved respirators for voluntary respirator use to miners exposed at or above the action level but at or below the PEL. The current respiratory protection standard, ASTM F3387-19, does not address voluntary respirator use. MSHA has determined that the OSHA Respiratory Protection Standard is more protective and better suited for the mining industry for multiple reasons, including the fact that it explicitly addresses voluntary respirator use and requires operators to implement certain elements of a written respiratory protection program to ensure safe voluntary respirator use. The Agency expects that changing from ASTM F3387-19 to OSHA's Respiratory Protection Standard would enhance protections for miners who voluntarily wear respirators when permitted by the operator.

MSHA also understands that the OSHA Respiratory Protection Standard would provide other safety advantages over the ASTM standard. For example, the OSHA Respiratory Protection Standard includes a straightforward fixed threshold for oxygen deficiency and a provision for providing powered air purifying respirators (PAPRs) to miners who are not medically cleared for negative-pressure respirator use (29 CFR 1910.134(e)(6)(ii)). Further, the OSHA Respiratory Protection Standard is freely available to the public in the CFR and on the OSHA website, and OSHA has published an extensive catalog of compliance assistance materials to aid workers and employers with understanding the standard. Adoption of the OSHA Respiratory Protection Standard would reduce administrative complexity and potential for confusion at mining facilities that fall under both OSHA and MSHA jurisdictions.

The existing respiratory protection standard is ASTM F3387-19, a voluntary consensus standard published by ASTM International in 2019. MSHA incorporated the requirements of ASTM F3387-19 into the Agency's standards in the 2024 Silica Final Rule because it provides detailed information on respirator selection that is based on NIOSH's extensive experience in testing and certifying respirators for occupational use as well as OSHA's research and regulatory development in respiratory protection. Thus, in MSHA's experience, the provisions of the ASTM F3387-19 standard and OSHA's requirements in 29 CFR 1910.134 are largely equivalent with respect to respiratory protection program practices. For a detailed discussion of OSHA's respiratory protection requirements in 29 CFR 1910.134, see *Section IV.C, Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134*.

One area that ASTM F3387-19 does not address, and which OSHA's respiratory protection requirements do address, is voluntary respirator use when exposures are below the PEL and miners are not required by the operator to wear a respirator. MSHA's existing requirements do not specify what actions mine operators must take to prevent health or safety hazards when miners choose to wear respirators voluntarily.

Under the OSHA Respiratory Protection Standard, respiratory protection is required in any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer. For example, if a mine operator requires a respirator to be worn in a particular area, even when the miner is working in exposures determined to be below the respirable crystalline silica standard or other recognized exposure limits, any respirator use (including a P100 filtering facepiece respirator) would not be considered voluntary. In this instance, the miner would need to be enrolled in a written respiratory protection program meeting the requirements of 29 CFR 1910.134.

If respiratory protection is not required and the mine operator does not advise the miner to use a respirator, but the miner requests to use a respirator, the respirator use is considered voluntary under the OSHA Respiratory Protection Standard, whether the respirator is provided by the mine operator or the miner is permitted to use their own respirator. If the mine operator determines that voluntary respirator use will not in itself create a hazard and determines respirator use is permissible, the mine operator must provide respirator users with a copy of Appendix D to § 1910.134 titled, *(Mandatory) Information for Employees Using Respirators When Not Required Under the Standard* (Appendix D).

Generally, for voluntary respirator use, Appendix D instructs the user to:

1. Choose respirators that have been certified by NIOSH;
2. Follow the manufacturer's instructions provided with the respirator including information on how to properly use the respirator and maintain and care for the respirator, and also follow warnings on the limitations of the respirator;
3. Wear a respirator appropriate for the contaminant to be protected against; and
4. Keep track of the user's respirator so that the user does not mistakenly use someone else's respirator.

Under 29 CFR 1910.134(c)(2)(i), the mine operator would be required to provide the advisory information on respirators presented in Appendix D to any miners who voluntarily use

respirators. MSHA agrees with this approach and expects that Appendix D would provide essential guidance for miners who voluntarily wear respirators to ensure their proper and effective use.

Under these voluntary use conditions, the OSHA Respiratory Protection Standard would require mine operators to develop a written respiratory protection program and implement those elements necessary to ensure that any miner using a respirator voluntarily is medically able to do so (29 CFR 1910.134(c)(1)(ii)), and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user (29 CFR 1910.134(c)(1)(v)). Voluntary use of respirators does not require all elements of the OSHA Respiratory Protection Standard to be included in the written program. Mine operators would not be required to include in a written respiratory protection program those miners who voluntarily use only filtering facepiece respirators (e.g., N95 and P100 filtering facepiece respirators).

MSHA proposes adopting the OSHA Respiratory Protection Standard by reference for four reasons.

First, the OSHA Respiratory Protection Standard reflects current respirator technology and best practices for effective respiratory protection. It is freely available to the public in the CFR and on OSHA's website, including guidance on fit testing, medical evaluation, and voluntary use.

Second, the OSHA Respiratory Protection Standard comprehensively covers all aspects of respiratory protection programs, from establishment through implementation and evaluation. It addresses program administration, standard operating procedures, medical evaluation, respirator selection, training, fit testing, and respirator maintenance, inspection, and storage. Based on MSHA's experience, adopting the OSHA Respiratory Protection Standard would help mine operators establish and implement effective respiratory protection programs to protect miners. This adoption would enhance miner safety and health since many mine operators already know how to apply the OSHA standard to their mine-specific conditions.

Third, the OSHA Respiratory Protection Standard recognizes voluntary use of respirators. The standard requires employers to provide information on the voluntary use of respirators (Appendix D to § 1910.134) and develop and implement certain elements of a written respiratory protection program to ensure the safe and effective voluntary use of respirators to protect miner health and safety. Therefore, the standard does not discourage mine operators from allowing the voluntary use of respirators for added protection.

Fourth, OSHA has compiled extensive, freely available general guidance for employers, respirator program administrators, and respirator users to ensure the effective development and administration of respiratory protection programs. The guidance includes web pages, and online tools related to respiratory protection created by OSHA and other agencies, such as NIOSH. For example, OSHA provides employers with guidance on selecting appropriate respirators for workers using Assigned Protection Factors (APFs) and Maximum Use Concentrations (MUCs). Additionally, OSHA's Small Entity Compliance Guide offers a detailed step-by-step resource, featuring checklists and frequently asked questions that enhance both worker and employer understanding of the OSHA Respiratory Protection Standard.[21]

Under this proposed rule, mine operators requiring respiratory protection would need to ensure the proper selection, fit testing, medical evaluation, training, use, and maintenance of NIOSH-approved respirators in accordance with 29 CFR 1910.134, so that no miner is exposed to respirable crystalline silica at or above the action level.

MSHA recognizes that OSHA is currently considering revising the medical evaluation requirements for certain types of respirators in the OSHA Respiratory Protection Standard. On July 1, 2025, OSHA published the proposed rule titled "*Amending the Medical Evaluation Requirements in the Respiratory Protection Standard for Certain Types of Respirators.*" 90 FR 28463. OSHA's proposed rule, if finalized, would remove medical evaluation requirements for

[21] OSHA3384-09, "*Small Entity Compliance Guide for the Respiratory Protection Standard*." 2011 https://www.osha.gov/sites/default/files/publications/3384small-entity-for-respiratory-protection-standard-rev.pdf (last accessed Jan. 7, 2026).

employees required to use filtering facepiece respirators and loose-fitting powered air purifying respirators. 90 FR 28471-28472. MSHA will monitor this rulemaking and may consider whether additional modifications to the standard or supplemental mining-specific requirements would be necessary for unique circumstances found in mining environments.

4. *Section 60.15 – Medical surveillance.*

Existing § 60.15 requires MNM mine operators to provide medical surveillance at no cost to miners.

MSHA is proposing to amend the medical surveillance requirements in existing § 60.15 to: (1) change from mandatory to voluntary medical examinations for miners new to the MNM industry; (2) require mandatory medical examinations for all sampled miners, both MNM and coal miners, when the sampled miner is exposed above the PEL, as indicated by an MSHA sample[22]; (3) modify the frequency of voluntary medical surveillance for MNM miners; (4) remove the requirement for reporting chest X-ray classifications to NIOSH; and (5) remove the requirement for the PLHCP to provide any recommended limitations on the miner's use of respirators in the PLHCP's written medical opinion.

Existing § 60.15 is titled *Medical surveillance for metal and nonmetal mines*. However, one provision of proposed § 60.15 would apply to both coal mine operators and MNM mine operators. Accordingly, MSHA proposes to change the title of § 60.15 to "*Medical surveillance*."

a. Paragraph (a)

Existing § 60.15(a), *Medical surveillance*, requires MNM mine operators to provide each MNM miner medical examinations. Existing paragraph (a)(2) outlines the requirements of the medical examination including: medical and work history, physical examination with special emphasis on the respiratory system, chest X-ray, and pulmonary function test. The medical and work history covers a miner's present and past work exposures, illnesses, history of smoking

[22] MSHA Handbook Number: PH20-V-4, "*Health Inspection Procedures Handbook*." December 2020. https://www.msha.gov/sites/default/files/Directive%20%26%20Guidance/Handbooks/PH20-V-4%20Health%20Inspection%20Procedures%20Handbook.pdf (last accessed Jan. 7, 2026).

including e-cigarette use and vaping, and any symptoms indicating respirable crystalline silica related diseases and compromised lung function.

Under this proposed rule, MSHA would revise § 60.15(a) to apply to all mine operators, both MNM and coal. The Agency is proposing this change to paragraph (a) because § 60.15(c) would require mandatory medical examinations for all sampled miners, both MNM and coal miners, when the sampled miner (or miners that were part of a representative sample) is exposed above the PEL, as indicated by an MSHA sample.[23] When a personal breathing-zone air sample result is above the PEL, the mandatory medical examination would be required for the sampled miner. When an occupational environmental sample result is above the PEL, the mandatory medical examination would be required for all sampled miners who rotated through that occupation on the sampled shift.

b. Paragraph (b)

Existing § 60.15(b), *Voluntary medical examinations*, requires MNM mine operators to provide the opportunity to all MNM miners employed at the mine to have voluntary medical examinations during an initial 12-month period and at least every 5 years after the end of the initial 12-month period. MSHA proposes to make an editorial change in the § 60.15(b) paragraph heading to *Voluntary metal and nonmetal medical examinations*. Additionally, MSHA proposes to add the words "metal and nonmetal" to this paragraph to specify that the requirement to offer voluntary medical examinations would continue to apply only to MNM mine operators. This clarification is necessary due to the proposed removal of "for metal and nonmetal mines" in the title of this section.

MSHA proposes to amend § 60.15(b)(1) to expand the initial period for offering medical examinations to a 5-year period for all MNM miners employed at a mine. The existing requirement in § 60.15(b)(2) for MNM mine operators to make periodic medical examinations

[23] MSHA Handbook Number: PH20-V-4, "*Health Inspection Procedures Handbook*." December 2020. https://www.msha.gov/sites/default/files/Directive%20%26%20Guidance/Handbooks/PH20-V-4%20Health%20Inspection%20Procedures%20Handbook.pdf (last accessed Jan. 7, 2026).

available at least every 5 years after the end of the initial period in § 60.15(b)(1) is unchanged. MSHA expects that this proposed amendment would allow more miners to successfully participate in the medical surveillance program for the following reasons.

In the preamble to the 2024 Silica Final Rule, MSHA carefully considered comments related to availability of NIOSH-certified B Readers and issues with access to a PLHCP or specialist qualified to perform the medical surveillance examinations, especially for mines in rural locations. MSHA determined that MNM mine operators should not experience any significant issues identifying a PLHCP or specialist to conduct medical examinations and emphasizes that the 2024 Silica Final Rule allows flexibility by not mandating that the medical examinations be conducted by full-time health care professionals employed by mine operators.

MSHA also determined that technological advancements eliminating the need for geographic proximity between patients and technicians such as NIOSH-certified B Readers, combined with the widespread availability of X-ray testing, make obtaining X-rays and having the results classified by NIOSH-certified B Readers technologically feasible. MSHA found that digital X-ray technology enables chest X-rays to be submitted electronically to remotely located NIOSH-certified B Readers for classification and interpretation. Following consultation with NIOSH, MSHA concluded that NIOSH-certified B Readers with remote reading capabilities are available in sufficient numbers to satisfy the 2024 Silica Final Rule's requirements. Therefore, MSHA determined that the limited number of NIOSH-certified B Readers in certain geographic locations will not be an obstacle for MNM operators. MSHA further concluded that any increase in demand for these services can be addressed by providers.

Since the 2024 Silica Final Rule's publication, MSHA has become aware that state medical licensing rules could impact the availability of NIOSH-certified B Readers in some states. MSHA is now aware that NIOSH-certified B Readers with remote reading capabilities must be medically licensed in the state where they practice remotely. Therefore, a NIOSH-certified B Reader with remote reading capabilities does not guarantee that miners in other states

can access that NIOSH-certified B Reader. MSHA is aware that this could limit access for mine operators and miners attempting to complete initial medical examinations within the 12-month period required in existing § 60.15(b)(1). Also, MSHA is aware of the Interstate Medical Licensure Compact, an agreement among participating states and territories designed to streamline the licensing process for physicians who want to practice in multiple states. However, it is unclear how the Interstate Medical Licensure Compact has affected the number of multi-state licensed NIOSH-certified B Readers.

MSHA has data on the number of NIOSH-certified B Readers located in each state. However, MSHA does not have information on NIOSH-certified B Readers licensed to practice in additional states. The available information indicates that many states with significant MNM mining employment have few in-state NIOSH-certified B Readers. MSHA requests additional data on the sufficiency of NIOSH-certified B Reader availability to meet the needs of MNM mine operators providing voluntary medical examinations.

In addition, MSHA is aware that demand for critical minerals is expected to continue to increase.[24] This would likely result in an increase in the number of MNM mines and in the number of miners at existing mines, which would therefore increase the number of MNM miners seeking voluntary medical examinations. MSHA's proposed change in § 60.15(b)(1) to expand the initial period for offering medical examinations to a 5-year period for all MNM miners employed at a mine would smooth out demand over the course of 5 years instead of an initial 12-month period, ensuring mine operators' and miners' access to PLHCPs, certified specialists, and NIOSH-certified B Readers.

MSHA expects that this would facilitate miner access to medical examinations under the existing § 60.15(b)(2) requirement for MNM mine operators to make periodic medical examinations available at least every 5 years after the initial medical examinations. By extending

[24] International Energy Agency (IEA). 2025. Global Critical Minerals Outlook 2025, IEA, Paris https://www.iea.org/reports/global-critical-minerals-outlook-2025, License: CC BY 4.0

the initial period for medical examinations in § 60.15(b)(1), miners who may otherwise encounter resource constraints when accessing PLHCPs, certified specialists, and NIOSH-certified B Readers under § 60.15(b)(2) due to the demand created when numerous miners seek these same resources within a 12-month timeframe, should find it easier to obtain access to those resources.

Miners should use the information obtained from medical surveillance to establish a baseline for their health status and may use information from periodic medical examinations to make informed decisions regarding their health.

MSHA proposes to revise § 60.15 by adding a new paragraph designated as paragraph (b)(3). The proposed requirements in new paragraph (b)(3) are substantially similar to the requirements for new miners in existing § 60.15(c), *Mandatory medical examinations*; however, medical examinations for MNM miners new to the mining industry would be voluntary instead of mandatory under this proposed change. The proposed addition of new paragraph (b)(3) includes: (i) an initial examination no later than 60 days after starting employment, (ii) a follow-up examination within 3 years of the initial examination, and (iii) a follow-up examination by a specialist no later than 2 years after the follow-up examination in proposed (b)(3)(ii) if the X-ray shows evidence of pneumoconiosis or the spirometry examination indicates evidence of decreased lung function.

MSHA expects that this change would not result in a reduction of safety because MNM miners new to the mining industry would still be provided with the opportunity to voluntarily participate in medical surveillance, with the opportunity for a baseline medical examination provided within 60 days of beginning work in the mining industry and the opportunity for at least one medical examination every 5 years after the initial medical examination. This proposed change would help address concerns about the availability of NIOSH-certified B Readers to ensure those miners, both MNM and coal, exposed above the PEL can access the mandatory exams in proposed § 60.15(c). In the Agency's experience, the coal miners' medical surveillance

program (30 CFR 72.100) is appropriate to provide coal miners with information needed for early detection of silica-related disease.

MSHA requests comments on whether the Agency should tie voluntary medical examinations for MNM miners to exposure levels at or above the action level. Please provide comments on the potential benefits and challenges of implementing such a measure and its effectiveness in enhancing miner health and safety.

MSHA is considering allowing employers to use pre-employment medical exams required by the mine operator as a condition of employment to satisfy the requirements for initial medical exams under existing § 60.15(c)(1), which is § 60.15(c)(3)(i) in this proposed rule. The changes would allow pre-employment exams that fulfill the requirements of the initial medical exam in existing § 60.15(a)(2) and existing § 60.15(d)(1) to fulfill the requirements of the initial medical exam. The mine operator, or their selected PLHCP or specialist, would provide miners with an authorization form stating that miners' participation in the medical surveillance portion of the exam is voluntary and explaining that detailed results from the medical surveillance portion of the exam would only be provided to the miner. The miner would need to authorize the voluntary medical examination. MSHA anticipates this dual-purpose exam structure would reduce time miners must spend traveling for medical exams and mitigate issues related to access to a PLHCP or specialist qualified to perform the medical surveillance examinations, especially for mines in locations with limited access to health care. MSHA requests comments on adding provisions that would allow pre-employment exams to serve the dual purpose of fit-for-duty examinations and medical surveillance. In particular, MSHA is interested in the potential benefits for miners and the potential cost implications for mine operators (including estimates of increases in paperwork costs). For a more detailed discussion of paperwork costs, see *Section X. Paperwork Reduction Act of 1995*.

c. Paragraph (c)

Existing § 60.15(c), *Mandatory medical examinations*, requires MNM mine operators to provide mandatory medical examinations for miners who are beginning work in the mining industry for the first time. As discussed, the proposed addition of § 60.15(b)(3) would make medical examinations voluntary for MNM miners who begin work in the mining industry for the first time.

Proposed § 60.15(c), *Mandatory medical examinations for all miners exposed above the PEL,* would require mandatory medical examinations for all sampled miners (both MNM and coal) who are exposed above the PEL based on an MSHA sample, within 60 days of receiving the sample results, except for miners who have received a medical examination within the past 2 years under § 60.15 or in accordance with 30 CFR 72.100.

This proposed revision would reflect a risk-based approach to medical surveillance because it involves identifying and prioritizing both MNM and coal miners who have overexposures to respirable crystalline silica for medical examinations. MSHA expects that miners, both MNM and coal miners, who have confirmed overexposures to respirable crystalline silica face the greatest risk of developing silica-related diseases and, therefore, are most in need of mandatory medical examinations. MSHA is aware that a single examination at the time of an over-exposure would be unlikely to identify silicosis unless the miner had acute silicosis or the miner had a previous history of exposure over years; however, a mandatory examination would provide a baseline for later comparison and would help indicate disease progression.

MSHA emphasizes that coal mine operators would continue to provide medical examinations for coal miners under 30 CFR 72.100, which is unchanged by this proposal. The proposed change in this section would apply to coal mine operators only when coal miners have been exposed to respirable crystalline silica above the PEL, as confirmed by an MSHA sample. In this instance, coal mine operators would be required to provide medical examinations in

accordance with this section (§ 60.15). Coal mine operators must separately comply with existing § 72.100 for all other required medical examinations in that section for coal miners.

The proposed change to a risk-based mandatory medical examination structure based on exposures above the PEL resolves the concerns raised by stakeholders about the 60-day timeframe for when medical examinations would be required to be offered and the capacity of PLHCPs and NIOSH-certified B Readers to meet the demands for those medical examinations in the existing standards in § 60.15(c). MSHA expects that this proposal addresses concerns about availability of NIOSH-certified B Readers for medical examinations by providing more time for initial voluntary exams and targeting mandatory exams for those miners at greatest risk, i.e., miners with known exposures above the PEL. Furthermore, the Agency expects this proposal to increase safety for all miners compared to the 2024 Silica Final Rule by requiring all miners to get a mandatory medical examination when exposed to respirable crystalline silica above the PEL.

As described in the 2024 Silica Final Rule, commenters requested that the Agency consider a risk-based approach for medical surveillance in which examinations would be triggered for miners exposed to respirable crystalline silica above a specific level of exposure. One commenter stated that the need for medical surveillance depends on the extent of workplace silica exposures and must be coordinated with industrial hygiene exposure monitoring results. Representatives of industry also supported a risk-based approach with a threshold or exposure trigger for medical surveillance. MSHA's proposed change to mandatory medical examinations for miners with exposures above the PEL addresses these stakeholder concerns by requiring mine operators to provide mandatory medical examinations to all miners with documented overexposures based on MSHA samples. This approach ensures that medical examinations occur closer in time to confirmed overexposures, enabling earlier detection of potential health effects and more timely medical intervention, which can lead to improved health outcomes compared to examinations conducted on an arbitrary schedule potentially years after an overexposure event.

MSHA expects that these proposed mandatory medical surveillance requirements would enhance protections for miners because the mandatory medical examinations would be required for all sampled miners who are overexposed, including both miners new to the industry and experienced miners. Additionally, the proposed changes would extend these protections to both MNM and coal miners. The information obtained from a mandatory medical examination for sampled miners exposed to respirable crystalline silica levels above the PEL would allow miners to make informed decisions about their health.

MSHA requests comments on whether the proposed mandatory medical examination requirements for sampled miners should be required for when mine operator samples, including the 21 percent error factor adjustment, are above the PEL.

d. Paragraph (d)

Existing § 60.15(d), *Medical examination results*, requires that mine operators ensure that, within 30 days of the medical examination, the PLHCP or specialist will provide (1) the results of the medical examination to the miner, the miner's designated representative, or another designee identified by the miner, and (2) the results of the chest X-ray classification to NIOSH.

MSHA proposes to remove the requirements of § 60.15(d)(2), which requires mine operators to ensure that the PLHCP or specialist provides the results of chest X-ray classifications to NIOSH within 30 days of the medical examination "once NIOSH establishes a reporting system." MSHA does not have the authority to impose regulatory requirements on PLHCPs or specialists. While MSHA can regulate mine operators, it would be difficult for MSHA to enforce a requirement for mine operators to require PLHCPs or specialists to submit medical information to another government agency.

With the proposed removal of paragraph (d)(2), MSHA also proposes to make an editorial change by removing the designation for paragraph (d)(1).

e. Paragraph (e)

Existing § 60.15(e), *Written medical opinion*, outlines the requirements for the written medical opinion that the mine operator will obtain from the PLHCP or specialist within 30 days of the medical examination. These requirements include: (1) the date of the medical examination; (2) a statement that the medical examination has met the requirements of this section; and (3) any recommended limitations on the miner's use of respirators.

Proposed changes to § 60.15(e) would remove the requirement of § 60.15(e)(3) to include a written medical opinion from the PLHCP or specialist regarding limitations on the miner's use of respirators because it is redundant with the requirements for respiratory protection in both the Agency's existing respiratory protection standard (ASTM F3387-19) and the proposed adoption of OSHA's respiratory protection standard requirements. This proposed change would separate the requirements for medical evaluations conducted for respirator use from the medical surveillance program. The requirements of § 60.15(e)(3) would instead be addressed through MSHA's proposed adoption by reference of OSHA's respiratory protection program requirements, which include the requirement for a written medical determination by a PLHCP regarding the miner's ability to wear a respirator under 29 CFR 1910.134(e)(6). MSHA also proposes to change the description of the record that the mine operator must receive from the PLHCP or specialist from written medical opinion to written confirmation of medical examination. The Agency expects that this better describes the purpose of the written confirmation and will avoid confusion with medical evaluation records created and retained under § 60.14(c). MSHA also proposes to change the paragraph heading from "Written medical opinion" to "Written confirmation of medical examination" to reflect these changes.

With the proposed removal of paragraph (e)(3), MSHA also proposes to make an editorial change by adding the word "and" to the end of paragraph (e)(1) and removing the word "and" from the end of paragraph (e)(2).

f. Paragraph (f)

Existing § 60.15(f), *Written medical opinion records*, outlines the requirement that mine operators must maintain written medical opinion records. MSHA proposes to change the paragraph heading from "Written medical opinion records" to "Written confirmation of medical examination records" to reflect the changes previously discussed for § 60.15(e). The Agency also proposes the same change, replacing "written medical opinion records received" with "written confirmation of medical examination records" to the description of the record that must be retained under paragraph (f). MSHA considers this a more accurate description of the record that a mine operator must retain and reflects the proposed changes already discussed in § 60.15(e).

5. Section 60.16 – Recordkeeping requirements.

Existing § 60.16 identifies recordkeeping retention requirements for records created in Part 60, including evaluation, sampling, and corrective actions records, as well as written determination records and written medical opinion records.

MSHA proposes to make corresponding changes to the record retention requirements in § 60.16 related to the proposed removal of the periodic evaluation and post-evaluation sampling requirements in existing paragraphs § 60.12(c) and (d).

MSHA is also proposing to add a retention period for medical evaluations of miners to determine a miner's ability to wear a respirator under proposed § 60.14(d), *Medical evaluation records*. This is not a new record retention requirement because both ASTM F3387-19 and the OSHA Respiratory Protection Standard require retention of medical evaluation records as part of a written respiratory protection program. As previously described in § 60.14, MSHA is proposing to exclude the OSHA retention period for medical evaluations made as part of the OSHA Respiratory Protection Program because it is not enforced under 29 CFR 1910.134; therefore, the record retention period would not be adopted by reference in this proposal.

Existing paragraph (a)(1) sets the retention period for evaluation records made under § 60.12(c) to be at least 5 years from the date of each evaluation. With the proposed removal of

§ 60.12(c) and (d), existing paragraph (a)(1) is no longer needed. Therefore, MSHA proposes to remove paragraph (a)(1) from § 60.16 in its entirety and redesignate existing paragraphs (a)(2) through (a)(4) as paragraphs (a)(1) through (a)(3).

Existing paragraph (a)(2) (redesignated as paragraph (a)(1) under this proposed rule) sets the retention period for sampling records made under § 60.12(g) to be at least 5 years from the sample date. With the proposed removal of § 60.12(c) and (d), MSHA proposes to amend the section reference noted in this sentence from "§ 60.12(g)" to "§ 60.12(e)." The sampling records retention period would remain unchanged.

Existing paragraph (a)(3) (redesignated as paragraph (a)(2) under this proposed rule) sets the retention period for corrective actions records made under § 60.13(c) to be at least 5 years from the date of each corrective action. In addition, these records must be stored with the records of related sampling under § 60.12(g). With the proposed removal of § 60.12(c) and (d), MSHA proposes to amend the section reference noted in the last sentence from "§ 60.12(g)" to "§ 60.12(e)." The corrective actions records retention period would remain unchanged.

MSHA proposes adding a new paragraph (a)(4) for the retention of medical evaluation records from the OSHA Respiratory Protection Program under § 60.14(c)(2). Proposed paragraph (a)(4) sets the retention period for medical evaluation records from a respiratory protection program made under § 60.14(c) to be the duration of a miner's employment plus 6 months. This proposed retention period is consistent with existing requirements for similar records in this section and § 57.5075.

Existing paragraph (a)(4) would be redesignated as paragraph (a)(5). The record description would also be changed from "Written medical opinion records received from a PLHCP or specialist" to "Written confirmation of medical examination records received from a PLHCP or specialist" to reflect the changes previously discussed for existing § 60.15(e) and (f).

Existing *Table 1 to Paragraph (a)—Recordkeeping Requirements* lists the record retention requirements of § 60.16. MSHA proposes to amend the table to reflect the proposed amendments to § 60.16 already discussed.

6. Section 60.17 – Severability.

Existing § 60.17 includes a statement of severability that each section of this part, as well as sections in 30 CFR parts 56, 57, 70, 71, 72, 75, and 90 that address respirable crystalline silica or respiratory protection, is separate and severable from the other sections and provisions. In the event that a court of competent jurisdiction stays, enjoins, or invalidates any provision, section, or application of this rule, the remainder of the rule would be allowed to take effect.

Under this proposed rule, MSHA is proposing to make editorial clarifications to the severability statement in § 60.17 by adding the words "and provision" to the first sentence and "of sections or provisions" to the end of the second sentence. These proposed additions do not change the intent or meaning of the severability statement. Rather, going forward they would clarify MSHA's intent that if any section or provision of the "*Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection*" rule—including sections of 30 CFR parts 56, 57, 70, 71, 72, 75, and 90 that address respirable crystalline silica or respiratory protection—is held invalid or unenforceable or is stayed or enjoined by any court of competent jurisdiction, the remaining sections or provisions would remain effective and operative. This is intended to clarify that MSHA intends that the severability provisions of the rule are intended to be applied at the smallest possible level so as to minimize any disruption caused by the potential severability of any section or provision and to maximize the survivability of the remaining portions of the part.

B. Conforming Amendments

In this proposed rule, MSHA makes proposed conforming amendments in 30 CFR parts 56, 57, 71, and 72. The conforming amendments in 30 CFR parts 56, 57, and 72 are based on the proposed changes to the Agency's written respiratory protection program requirements in Part

60. Specifically, MSHA is proposing conforming amendments to update the existing written respiratory protection program requirements for MNM mines and coal mines based on the proposed amendment to adopt by reference OSHA's requirements in 29 CFR 1910.134. In 30 CFR parts 56 and 57, MSHA is making this change to the temporary sections designated as 30 CFR 56.5005T and 57.5005T. These "T" sections were the conforming amendments established in the 2024 Silica Final Rule and their effective date was delayed due to a court-ordered stay (91 FR 17143). MSHA will notify the regulated community when the delay in the effective date ends and sections 56.5005T and 57.5005T are redesignated as sections 56.5005 and 57.5005.

The conforming amendment in 30 CFR part 71 removes an outdated reference to respirable dust containing quartz and replaces it with respirable crystalline silica.

1. Part 56 – Safety and Health Standards – Surface Metal and Nonmetal Mines.

a. Section 56.5005T - Control of exposure to airborne contaminants.

Existing § 56.5005T sets forth the requirements for the control of exposures to harmful airborne contaminants and the use of respiratory protective equipment in surface MNM mines. Whenever respiratory protective equipment is used, its selection, fitting, maintenance, cleaning, training, supervision, and use must meet certain requirements. Existing paragraph (b) of § 56.5005T requires a written respiratory protection program consistent with the requirements of ASTM F3387-19, *Standard Practice for Respiratory Protection*, approved on August 1, 2019.

MSHA is proposing to amend the written respiratory protection program requirement in § 56.5005T by deleting the reference to ASTM F3387-19 and instead including the reference to OSHA's requirements in 29 CFR 1910.134. MSHA would adopt by reference the requirements of 29 CFR 1910.134, *Respiratory protection*, in this section with two exclusions in proposed paragraphs (b)(1)(i) and (ii). This is a conforming amendment consistent with the proposed change to the written respiratory protection program requirement in paragraph (c)(2) of § 60.14.

The first proposed exclusion in paragraph (b)(1)(i) would be for 29 CFR 1910.134(d)(2)(iii), specifically the altitude exceptions for respirators for IDLH atmospheres.

Under 29 CFR 1910.134 (d)(2)(iii), all oxygen-deficient atmospheres are considered IDLH. OSHA permits exceptions based on altitude ranges which are listed in Table II to paragraph (c). Instead of adopting these altitude exceptions, MSHA proposes to continue its longstanding practice of classifying all atmospheres below 19.5 percent oxygen as IDLH and would not permit altitude adjustments for oxygen concentrations. MSHA proposes not to adopt this exception because mining operations are inherently unpredictable, with conditions that can rapidly become life-threatening. Additionally, MSHA's approach to IDLH atmospheres is consistent across all mines and is easily understood by mine operators and can be safely implemented to ensure miners' safety and health. For a more detailed discussion of this IDLH exclusion, see *Section IV. C. Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134*.

The second proposed exclusion in paragraph (b)(1)(ii) would be for the record retention period for medical evaluations under OSHA's Respiratory Protection Standard in 29 CFR 1910.134(m)(1), which is for the duration of the miner's employment plus 30 years. MSHA is proposing to exclude the OSHA retention period because it is not enforced under 29 CFR 1910.134; therefore, the record retention period would not be adopted by reference in this proposal.

MSHA is also proposing to add a retention period for records of medical evaluations of miners to determine a miner's ability to wear a respirator under proposed paragraph (b)(2). This is not a new record retention requirement because both ASTM F3387-19 and the OSHA Respiratory Protection Standard require retention of medical evaluation records as part of a written respiratory protection program. In proposed paragraph (b)(2), MSHA would require the medical evaluation records to be maintained and be made available for the duration of the

miner's employment plus 6 months. This proposed retention period is consistent with existing requirements for similar records in §§ 57.5075 and 60.16.

MSHA also proposes to remove paragraph (c) because it is redundant with the requirements for respirator use in IDLH atmospheres in OSHA's Respiratory Protection Standard. Existing § 56.5005T(c) requires that at least one other person with backup equipment and rescue capability must be present when respiratory protection is used in IDLH atmospheres. This same requirement with additional safety measures is in OSHA's Respiratory Protection Standard at 29 CFR 1910.134(g)(3), *Procedures for IDLH atmospheres*. For example, in addition to the requirements in paragraph (c), the OSHA standard also requires visual, voice, or signal line communications be maintained and the employee located outside the IDLH atmosphere be trained and equipped to provide effective emergency rescue. Therefore, with the adoption of OSHA's Respiratory Protection Standard in part 56 the requirement in existing § 56.5005T(c) would be removed.

2. Part 57 – Safety and Health Standards – Underground Metal and Nonmetal Mines.

a. Section 57.5005T - Control of exposure to airborne contaminants.

Similar to existing § 56.5005T, existing § 57.5005T sets forth the requirements for the control of exposures to harmful airborne contaminants and the use of respiratory protective equipment in underground MNM mines. Whenever respiratory protective equipment is used, its selection, fitting, maintenance, cleaning, training, supervision, and use must meet certain requirements. Existing paragraph (b) of § 57.5005T requires a written respiratory protection program consistent with the requirements of ASTM F3387-19, *Standard Practice for Respiratory Protection*, approved on August 1, 2019.

MSHA is proposing to amend the written respiratory protection program requirement in § 57.5005T by deleting the reference to ASTM F3387-19 and instead including the reference to OSHA's requirements in 29 CFR 1910.134. MSHA would adopt by reference the requirements of 29 CFR 1910.134, *Respiratory protection*, in this section with two exclusions in proposed

paragraphs (b)(1)(i) and (ii). This is a conforming amendment consistent with the proposed change to the written respiratory protection program requirement in paragraph (c)(2) of § 60.14.

The first proposed exclusion in paragraph (b)(1)(i) would be for 29 CFR 1910.134(d)(2)(iii), specifically the altitude exceptions for respirators for IDLH atmospheres. Under 29 CFR 1910.134 (d)(2)(iii), all oxygen-deficient atmospheres are considered IDLH. OSHA permits exceptions based on altitude ranges which are listed in Table II to paragraph (c). Instead of adopting these altitude exceptions, MSHA proposes to continue its longstanding practice of classifying all atmospheres below 19.5 percent oxygen as IDLH and would not permit altitude adjustments for oxygen concentrations. MSHA proposes not to adopt this exception because mining operations are inherently unpredictable, with conditions that can rapidly become life-threatening. Additionally, MSHA's approach to IDLH atmospheres is consistent across all mines and is easily understood by mine operators and can be safely implemented to ensure miners' safety and health. For a more detailed discussion of this IDLH exclusion, see *Section IV. C. Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134*.

The second proposed exclusion in paragraph (b)(1)(ii) would be for the record retention period for medical evaluations under OSHA's Respiratory Protection Standard in 29 CFR 1910.134(m)(1), which is for the duration of the miner's employment plus 30 years. MSHA is proposing to exclude the OSHA retention period because it is not enforced under 29 CFR 1910.134; therefore, the record retention period would not be adopted by reference in this proposal.

MSHA is also proposing to add a retention period for records of medical evaluations of miners to determine a miner's ability to wear a respirator under proposed paragraph (b)(2). This is not a new record retention requirement because both ASTM F3387-19 and the OSHA Respiratory Protection Standard require retention of medical evaluation records as part of a written respiratory protection program. In proposed paragraph (b)(2), MSHA would require the

medical evaluation records to be maintained and be made available for the duration of the miner's employment plus 6 months. This proposed retention period is consistent with existing requirements for similar records in §§ 57.5075 and 60.16.

MSHA also proposes to remove paragraph (c) because it is redundant with the requirements for respirator use in IDLH atmospheres in OSHA's Respiratory Protection Standard. Existing § 57.5005T(c) requires that at least one other person with backup equipment and rescue capability must be present when respiratory protection is used in IDLH atmospheres. This same requirement with additional safety measures is in OSHA's Respiratory Protection Standard at 29 CFR 1910.134(g)(3), *Procedures for IDLH atmospheres*. For example, in addition to the requirements in paragraph (c), the OSHA standard also requires visual, voice, or signal line communications be maintained and the employee located outside the IDLH atmosphere be trained and equipped to provide effective emergency rescue. Therefore, with the adoption of OSHA's Respiratory Protection Standard in part 57 the requirement in existing § 57.5005T(c) would be removed.

3. Part 71 – Mandatory Health Standards – Surface Coal Mines and Surface Work Areas of Underground Coal Mines

a. Section 71.700 – Inhalation hazards; threshold limit values for gases, dust, fumes, mists, and vapors

Under existing § 71.700(a), no operator of a coal mine may permit any person working at a surface installation or surface worksite to be exposed to airborne contaminants (other than respirable coal mine dust, respirable dust containing quartz, and asbestos dust) in excess of, on the basis of a TWA, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists in "Threshold Limit Values of Airborne Contaminants" (1972), which is incorporated by reference.

MSHA is proposing to amend § 71.700(a) by removing the reference to "respirable dust containing quartz" and replacing it with "respirable crystalline silica" and also making a non-

substantive change to update the terminology for the name of the MSHA District Office to the Mine Safety and Health Enforcement District Office. This conforming amendment is consistent with prior changes made to 30 CFR parts 56 and 57 for MNM mines in the 2024 Silica Final Rule, to add respirable crystalline silica as an exception. The Mine Safety and Health Enforcement District Office covers both MNM mines and coal mines since the Agency no longer differentiates between MNM District Offices and Coal District Offices.

4. Part 72 – Health Standards for Coal Mines.

a. Section 72.710 - Selection, fit, use, and maintenance of approved respirators.

Existing § 72.710 sets forth the requirements for the use of approved respirators in coal mines. Under existing § 72.710, approved respirators must be selected, fitted, used, and maintained in accordance with the provisions of a written respiratory protection program consistent with the requirements of ASTM F3387-19, *Standard Practice for Respiratory Protection,* approved August 1, 2019.

MSHA is proposing to amend the written respiratory protection program requirement in § 72.710 by deleting the reference to ASTM F3387-19 and instead including the reference to OSHA's requirements in 29 CFR 1910.134. MSHA proposes to designate the existing section text as paragraph (a). MSHA would adopt by reference the requirements of 29 CFR 1910.134, *Respiratory protection*, in this paragraph with two exclusions in proposed paragraphs (b)(1) and (2). This conforming amendment is consistent with the proposed change to the written respiratory protection program requirements discussed previously in §§ 56.5005T, 57.5005T, and 60.14.

The first proposed exclusion in paragraph (b)(1) would be for 29 CFR 1910.134(d)(2)(iii), specifically the altitude exceptions for respirators for IDLH atmospheres. OSHA permits exceptions based on altitude ranges which are listed in Table II to paragraph (c) of 29 CFR 1910.134. Instead of adopting these altitude exceptions, MSHA proposes to continue its longstanding practice of classifying all atmospheres below 19.5 percent oxygen as IDLH and

would not permit altitude adjustments for oxygen concentrations. MSHA proposes not to adopt this exception because mining operations are inherently unpredictable, with conditions that can rapidly become life-threatening. Additionally, MSHA's approach to IDLH atmospheres is consistent across all mines and is easily understood by mine operators and can be safely implemented to ensure miners' safety and health. For a more detailed discussion of this IDLH exclusion, see *Section IV. C. Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134*.

The second proposed exclusion in paragraph (b)(2) would be for the record retention period for medical evaluations under OSHA's Respiratory Protection Standard in 29 CFR 1910.134(m)(1), which is for the duration of the miner's employment plus 30 years. MSHA is proposing to exclude the OSHA retention period because it is not enforced under 29 CFR 1910.134; therefore, the record retention period would not be adopted by reference in this proposal.

MSHA is also proposing to add a retention period for records of medical evaluations of miners to determine a miner's ability to wear a respirator under proposed paragraph (b)(2). This is not a new record retention requirement because both ASTM F3387-19 and the OSHA Respiratory Protection Standard require retention of medical evaluation records as part of a written respiratory protection program. In proposed paragraph (b)(2), MSHA would require the medical evaluation records to be maintained and be made available for the duration of the miner's employment plus 6 months. This proposed retention period is consistent with existing requirements for similar records in §§ 57.5075 and 60.16.

C. Updating MSHA's Respiratory Protection Standard by Adopting by Reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134.

MSHA is proposing to update the Agency's existing respiratory protection standard to help safeguard the life and health of all miners exposed to respirable airborne hazards at MNM and coal mines. The proposed rule would adopt by reference OSHA's Respiratory Protection

Standard, 29 CFR 1910.134, in existing §§ 56.5005T, 57.5005T, 60.14, and 72.710. OSHA's Respiratory Protection Standard mandates a comprehensive respiratory protection program whenever respirators are needed for hazardous airborne contaminants, covering respirator selection, medical clearance, fit testing, training, proper use procedures, maintenance, and regular program evaluation to ensure worker safety. A formal respiratory protection program is required by OSHA whenever respirators are necessary to protect employee health or whenever respirators are required by the employer. This includes both air purifying respirators (e.g., filters, cartridges, canisters) and atmosphere-supplying respirators (e.g., self-contained breathing apparatus, airline).

OSHA's Respiratory Protection Standard is widely recognized by experts, industry leaders, government, and professional associations as an effective standard for protecting workers' health. The standard requires employers to select NIOSH-approved respirators when effective engineering controls are not feasible, or while they are being implemented. Respirator selection is based on hazard assessments (e.g., contaminant type, concentration, PEL), work-site conditions, respirator limitations, fit testing, and OSHA's Assigned Protection Factors (APFs), ensuring respirators adequately protect workers while allowing for job performance. In sum, the OSHA standard comprehensively addresses all necessary aspects of a respiratory protection program to ensure its effectiveness.

Since its comprehensive revision in 1998 (63 FR 1152, Jan. 8, 1998), OSHA's Respiratory Protection Standard has been updated several times to reflect advancements in respirator technology and industry best practices.[25] In particular, in 2006, OSHA revised its respiratory protection standard to incorporate definitions and requirements for APFs and Maximum Use Concentrations (MUCs), providing employers clear guidelines for selecting respirators based on contaminant levels and required protection. 71 FR 50121, 50122, Aug. 24,

[25] Federal Register Citations: 63 FR 20098, 20099, Apr. 23, 1998, as amended at 69 FR 46993, Aug. 4, 2004; 71 FR 16672, Apr. 3, 2006; 71 FR 50187, Aug. 24, 2006; 73 FR 75584, Dec. 12, 2008; 76 FR 33607, June 8, 2011; 77 FR 46949, Aug. 7, 2012; 84 FR 50755, Sept. 26, 2019.

2006. Most recently in 2019, OSHA updated Appendix A to § 1910.134, *Fit Testing Procedures*, to incorporate advances in quantitative fit testing technology 84 FR 50739, 50755, Sept. 26, 2019.

In the 2024 Silica Final Rule, MSHA updated the Agency's respiratory protection standard by incorporating by reference the ASTM F3387-19 standard because it provides mine operators with information and guidance on the proper selection, use, and maintenance of respirators. The ASTM F3387-19 standard replaced the American National Standards Institute's ANSI Z88.2-1969, "Practices for Respiratory Protection" (ANSI Z88.2-1969), which was the Agency's respiratory protection standard for more than 40 years.

During the public comment period for the silica proposed rule, one commenter recommended that MSHA align its proposed respiratory protection requirements with OSHA's requirements in 29 CFR 1910.134. Also, during meetings with stakeholders to discuss the 2024 Silica Final Rule's implementation, many operators stated that they already followed OSHA's Respiratory Protection Standard requirements at their mines or in other areas of their operations. Operators with dual MSHA and OSHA jurisdiction raised concerns about having to maintain two separate written respiratory protection programs: one program to meet MSHA's requirements under ASTM F3387-19 and another program to meet OSHA's requirements in 29 CFR 1910.134.

In response to comments received on the silica proposed rule suggesting that MSHA adopt the OSHA Respiratory Protection Standard, MSHA stated that ASTM F3387–19 references OSHA's Respiratory Protection Standard including APFs and MUCs, and fit testing. 89 FR 28339, 28352. Furthermore, MSHA observed that many operators, in particular larger mine operators, had already implemented many OSHA requirements in their respiratory protection programs, which are substantially similar to the requirements in ASTM F3387-19. 89 FR 28339. Also, MSHA responded that the Agency considers the mining industry to be already familiar with many requirements in ASTM F3387-19 because of its familiarity with OSHA's

Respiratory Protection Standard requirements. *Id.* Like the ASTM F3387-19 standard, OSHA's Respiratory Protection Standard contains requirements for: program administration; worksite-specific procedures; respirator selection; employee training; fit testing; user seal checks; medical evaluations; respirator use; respirator cleaning, maintenance, and repair; and other similar provisions. However, MSHA is aware that ASTM F3387-19 and OSHA's 29 CFR 1910.134 requirements differ in some areas such as voluntary respirator use, oxygen-deficiency evaluation, and PAPR accommodations for employees who are not medically cleared for negative-pressure respirator use.

During stakeholder meetings to discuss the implementation of the 2024 Silica Final Rule, MSHA emphasized that any miner who wears a respirator must be enrolled in the mine's respiratory protection program. Some stakeholders raised the issue of voluntary respirator use, and the Agency's response was that a miner who uses a respirator voluntarily would have to be enrolled in the full respiratory protection program according to the requirements of the ASTM F3387-19 standard. Some stakeholders asked if this applied to miners who use dust masks (e.g., N95 filtering facepiece respirators) to protect against nuisance dust. MSHA's response was yes, this applied to all voluntary use of respirators since ASTM F3387-19 did not distinguish between required use and voluntary use.

In light of these questions and issues, MSHA has reconsidered the ASTM F3387-19 standard's lack of voluntary use provisions. The Agency has determined that without voluntary use requirements, some miners may not be permitted to use certain respirators voluntarily because of the burden of enrolling these miners in a complete respiratory protection program. MSHA did not intend for the incorporation by reference of ASTM F3387-19 to discourage miners from voluntarily wearing certain respirators such as dust masks. The Agency expects that adopting by reference OSHA's Respiratory Protection Standard in 29 CFR 1910.134 would protect the health and safety of miners, both those who are required to wear respirators for

reasonable periods of time while working in exposures above the PEL and those who choose to voluntarily wear respirators, such as dust masks, in non-hazardous environments.

OSHA's voluntary use requirements in 29 CFR 1910.134(c)(2) apply when employers allow employees to use respirators when such use is not required by the employer or by the standard. Section 29 CFR 1910.134(c)(2)(i) states that employers must first determine that the respirator use will not in itself create a hazard. If the employer allows voluntary respirator use, section 29 CFR 1910.134(c)(2)(i) requires the employer to provide the employee with the information contained in Appendix D to 29 CFR 1910.134, titled "*Information for Employees Using Respirators When Not Required Under the Standard*." OSHA has determined that all the protections in the respiratory protection standard are not necessary in situations where respirator use is not required, i.e., voluntary use when working in exposures below the PEL. In cases where an employee is voluntarily using a respirator, the employer must implement some of the elements of a written respiratory protection program such as the medical evaluation component of the program and the cleaning, storage, and maintenance provisions, as applicable. 29 CFR 1910.134(c)(2)(ii). However, 29 CFR 1910.134(c)(2)(ii) provides that employers are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

Both OSHA (29 CFR 1910.134(b)) and MSHA (30 CFR 57.5015, 75.321) consider atmospheres with less than 19.5 percent oxygen by volume to be oxygen-deficient and IDLH, requiring the most protective level of respiratory protection (i.e., self-contained breathing apparatus). In contrast, ASTM F3387-19 permits lower oxygen concentrations before classifying an atmosphere as IDLH, provided that the source of oxygen reduction is understood and controlled. Reduced-oxygen atmospheres often appear unexpectedly and are rarely stable and controlled in the mining, general, and construction industries. Further, ASTM's complex oxygen-deficiency characterization approach requires atmospheric pressure measurements and calculations to determine the exact oxygen partial pressure (PO_2) and corresponding safe oxygen

percentage for a specific altitude and environment. It involves multiple thresholds and ranges for IDLH and non-IDLH conditions, making it more complex for workplace applications compared to the single MSHA and OSHA percentage that can be directly read from standard gas monitors. MSHA considers that a simple oxygen percentage cut-off is far more direct for compliance and immediate danger recognition and is also less prone to misinterpretation than ASTM's complex situation-dependent calculations.

Additionally, both OSHA and MSHA have recognized that certain underlying health issues can complicate negative pressure respirator use, often necessitating PAPRs for better comfort and protection. Under 29 CFR 1910.134(e)(6)(ii), if a PLHCP identifies a health risk with a negative-pressure respirator, the employer must provide a PAPR if the PLHCP confirms the employee can use a PAPR, effectively accommodating the employee's medical needs. MSHA incorporated this and other OSHA Respiratory Protection Standard provisions in its Diesel Particulate Matter Standard under 30 CFR 57.5060. While the ASTM F3387-19 standard includes medical evaluation as a required element of a compliant respiratory protection program, it does not directly address issues related to respirator medical clearance, which are found in a different voluntary consensus standard, ASTM F3620-22 *Standard Practice for Respiratory Protection – Respirator Use - Physical Qualifications for Personnel* (formerly ANSI Z88.6-2006). In the Agency's view, eliminating the need to cross-reference additional standards would be an improvement because it reduces complexity and decreases the potential for confusion in implementing respiratory protection requirements. Therefore, MSHA considers that adopting by reference 29 CFR 1910.134 would improve clarity and reduce confusion for mine operators in implementing their respiratory protection programs.

For these reasons, MSHA expects that OSHA's Respiratory Protection Standard in 29 CFR 1910.134 provides greater protection for miners' health and safety than the ASTM F3387-19 standard. While the ASTM F3387-19 standard serves as a valuable technical resource for respiratory protection program managers and other health and safety professionals, it is not

written in plain language and incorporates by reference numerous other technical standards that are not freely available to the public. In contrast, OSHA provides an extensive collection of free resources and compliance guides for respiratory protection, including its comprehensive *Small Entity Compliance Guide*.

As discussed, MSHA expects that the mining industry is already familiar with many requirements in OSHA's Respiratory Protection Standard. In fact, ASTM F3387-19 references OSHA's substance-specific regulations, APFs and MUCs, fit testing methods and fit factors, and cartridge/canister service life estimator software. MSHA anticipates that many mine operators will need to make few, if any, changes to their existing respiratory protection programs. Additionally, mine operators with mining and other operations under both MSHA and OSHA jurisdiction have already implemented written respiratory protection programs compliant with OSHA's standard. However, the Agency recognizes that mines using respirators intermittently or infrequently may need to revise their respiratory protection practices in accordance with the requirements, as applicable, of OSHA's Respiratory Protection Standard in 29 CFR 1910.134.

1. Respiratory Protection Program Requirements

The following provisions, as applicable, would be required in each written respiratory protection program including: procedures for proper respirator selection; medical evaluations; fit testing procedures for tight-fitting respirators; procedures for proper respirator use; procedures for cleaning, disinfecting, storing, inspecting, repairing, discarding, and maintaining respirators; procedures for ensuring atmosphere-supplying respirator breathing-air quality; training; and program evaluation. In addition, certain program elements may be required for voluntary respirator use to prevent potential hazards that could result from such discretionary use. The following subsections outline key requirements specified in 29 CFR 1910.134.

a. Program Administration

Title 29 CFR 1910.134 specifies several practices related to respiratory protection program administration, including the qualifications and responsibilities of a program

administrator. The respiratory protection program must be administered by a suitably trained program administrator who is qualified to administer the program. 29 CFR 1910.134(c)(3). Because many mines use dangerous chemicals and/or high exposures may be present, or sophisticated respirators are used, the program administrator must have the appropriate knowledge and experience to administer a respiratory protection program at such mines. In these circumstances, it would be necessary for the program administrator to seek out the expertise needed or to obtain appropriate training. For example, a program administrator's qualifications may have been gained through training or experience; however, the qualifications of a program administrator must be commensurate with the respiratory hazards present at a mine.

The qualified program administrator would ensure the respiratory protection program is in writing and would include mine-site specific procedures. The written respiratory protection program would be updated as often as necessary to reflect changing conditions at the mine that affect respirator use. The respiratory protection program administrator's responsibilities should include: measuring, estimating, or reviewing information on the concentration of airborne contaminants; ensuring that medical evaluations, training, and fit testing are performed; selecting the appropriate type or class of respirator that will provide adequate protection for each contaminant; maintaining records; evaluating the respirator program's effectiveness; and revising the program, as necessary.

b. Respirator Selection

Proper respirator selection is an important component of an effective respiratory protection program. OSHA's Respiratory Protection Standard provides that proper respirator selection considers the following: the nature of the hazard, user activity and workplace factors, use of NIOSH-approved (i.e., certified) respirators, and respirator limitations and compliance requirements. 29 CFR 1910.134(d)(1)(i)-(iii). The mine operator would also select approved respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the miner. 29 CFR 1910.134(d)(1)(iv).

The OSHA Respiratory Protection Standard provides specific requirements for establishing the nature of inhalation hazards, including determining the following: the types of airborne contaminants present in the workplace; the physical state and chemical properties of these contaminants; the likely airborne concentration of the contaminants (by estimate or measurement); the potential for an oxygen-deficient environment, the existence of an IDLH atmosphere; and compliance with applicable health standards for the contaminants. 29 CFR 1910.134(d)(1)(iii). The OSHA Respiratory Protection Standard includes other critical information to support the respirator selection process. This includes APFs to ensure selected respirators meet or exceed required protection levels based on exposure and mode of operation, and MUCs that identify the highest contaminant concentration for safe respirator use. 29 CFR 1910.134(d)(3)(i)(A)-(B) and Table 1. Both factors must be considered during the selection process.

Environments containing less than 19.5 percent oxygen are classified as IDLH and necessitate the most protective respiratory protection equipment—specifically, full facepiece pressure demand self-contained breathing apparatus (SCBA) certified by NIOSH for a minimum service life of 30 minutes, or a combination full facepiece pressure demand supplied-air respirator (SAR) equipped with an auxiliary self-contained air supply. 29 CFR 1910.134(d)(2)(i)(A) and (B). Additionally, respirators provided only for escape from IDLH atmospheres must be NIOSH-certified for escape from the atmosphere in which they will be used. 29 CFR 1910.134(d)(2)(ii).

The OSHA Respiratory Protection Standard at 29 CFR 1910.134(d)(2)(iii) provides a limited exception in IDLH environments – employers may use alternative atmosphere-supplying respirators if they can demonstrate that oxygen concentrations will consistently remain within the safe ranges specified in Table II of this section under all reasonably foreseeable circumstances (these ranges vary based on altitude). In practical terms, this allows the use of less complex atmosphere-supplying systems, such as airline respirators, when employers can verify that

oxygen levels will remain stable and within non-IDLH parameters according to altitude-adjusted thresholds.

This exception applies only in tightly controlled environments where conditions are thoroughly understood and predictable, for example, high-altitude operations where oxygen depletion patterns are consistent and manageable. In practice, employers seldom invoke this exception because most oxygen-deficient environments lack such control, and unexpected oxygen drops pose severe risks.

MSHA proposes to continue its longstanding practice of classifying all atmospheres below 19.5 percent oxygen as IDLH and requiring the most protective level of respiratory protection in these environments. While OSHA provides an altitude-based exception, MSHA proposes not to adopt this exception for mining operations. Mining environments are inherently unpredictable, with conditions that can rapidly become life-threatening. Hazards such as sudden methane releases, other gas emissions, ongoing oxidation reactions, or mine fires can cause abrupt oxygen depletion, creating IDLH conditions that require the highest level of respiratory protection.

c. Medical Evaluation

Medical evaluations determine a miner's ability to use a respirator safely. 29 CFR 1910.134(e). The mine operator would provide the medical evaluation before the miner is fit tested or is required to use the respirator in the workplace. 29 CFR 1910.134(e)(1). The OSHA Respiratory Protection Standard specifies medical evaluation procedures and provides a medical questionnaire to identify general medical conditions that could place miners who use respirators at risk of serious medical consequences. 29 CFR 1910.134(e)(2); Appendix C to 1910.134. The OSHA Respiratory Protection Standard provides that a program administrator would advise the PLHCP of the following conditions to aid in determining the need for a medical evaluation: type and weight of the respirator to be used; duration and frequency of respirator use (including use for rescue and escape); expected physical work effort; additional protective clothing and

equipment to be worn; and temperature and humidity extremes. The PLHCP would provide a written recommendation regarding a miner's ability to use a respirator. 29 CFR 1910.134(e)(6)(i). The written recommendation would only specify any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator; the need, if any, for follow-up medical evaluations; and a statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

The medical questionnaire and examinations would be administered confidentially during the miner's normal working hours or at a time and place convenient to the miner. 29 CFR 1910.134(e)(4)(i). Additionally, the medical questionnaire would be administered in a manner that ensures that the miner understands its content. 29 CFR 1910.134(e)(4)(ii).

Additional medical evaluations may be required under the following circumstances: (1) a miner reports medical signs or symptoms that are related to their ability to use a respirator; (2) a PLHCP, supervisor, or the respirator program administrator informs the mine operator that a miner needs to be reevaluated; (3) information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for a miner's reevaluation; or (4) a change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on a miner. 29 CFR 1910.134(e)(7).

d. Respirator Fit Testing

A serious hazard may occur if a tight-fitting respirator, even though correctly selected, is not properly fitted. For example, if an adequate face seal is not achieved, the respirator will provide less protection than designed because contaminants can leak into the breathing zone. Fit testing verifies that the selected make, model, and size of a respirator fits adequately and ensures that the expected level of protection is provided. The OSHA Respiratory Protection Standard specifies the types of fit tests allowed, procedures for conducting them, and how the fit test

results must be used. The standard allows both qualitative fit testing (QLFT) and quantitative fit testing (QNFT) to verify that wearers achieve a satisfactory fit with tight-fitting respirators. Acceptable QLFT and QNFT protocols are contained in Appendix A of 29 CFR 1910.134. QLFT is limited to negative-pressure respirators requiring a fit factor of 100 or less (i.e., half-mask respirator), as it relies on a pass/fail test based on the wearer's ability to detect taste or odor. This method cannot reliably confirm the higher seal integrity necessary for full-facepiece respirators or advanced protection levels, which require QNFT to attain higher fit factors (e.g., 500 or greater).

The standard provides for each respirator wearer to be fit tested before being assigned a tight-fitting respirator. Fit testing must be conducted at least once every 12 months or whenever a wearer or observer expresses concern about respirator fit or comfort, or the wearer has a condition that may interfere with the face piece seal.

OSHA permits the use of stannic chloride as an irritant smoke used in its QLFT protocols in Appendix A to § 1910.134—*Fit Testing Procedures (Mandatory)*. MSHA is aware of concerns with using stannic chloride as an irritant smoke due to health risks associated with exposure such as coughing, chest discomfort, shortness of breath, and mucous membrane burns if inhaled or exposed to the eyes. OSHA acknowledged these concerns in its 1998 rulemaking (63 FR 1152) but chose to retain irritant smoke as a permissible qualitative fit testing method for several reasons discussed in the following.

- Historical use and familiarity: Irritant smoke had been in use for decades and was deeply embedded in existing respirator programs, particularly in industries like firefighting and hazmat response. Eliminating it abruptly would have disrupted established programs;
- Practical detection advantage: The involuntary cough/irritation response was seen by some stakeholders as a more objective indicator of fit failure compared to taste- or smell-based methods, which depend on the worker's subjective reporting;

- Industry and stakeholder pressure: During the comment and rulemaking process, some employers and industry groups argued for retaining it as a legitimate option, and OSHA gave weight to that input; and
- Conditional safeguards: OSHA's position was essentially that with proper precautions and procedures — such as not using it on workers with respiratory conditions — the risk could be managed to an acceptable level.

MSHA requests comments on whether the agency should prohibit the use of stannic chloride during fit testing. MSHA is particularly interested in comments that provide information on the advantages and disadvantages in allowing its continued use.

e. Use of Respirators

Written procedures are essential for the proper use of respirators. Specific procedures are required to prevent leaks in the respirator facepiece seal, prevent miners from removing respirators in hazardous environments, ensure that respirators operate effectively throughout the work shift, and protect miners entering IDLH atmospheres. The OSHA Respiratory Protection Standard would mandate that operators prohibit miners from wearing tight-fitting respirators if they have any condition that would interfere with the respirator seal or valve function. For example, facial hair that comes between the facepiece sealing surface and the face, or that interferes with valve operation, is prohibited.

For all tight-fitting respirators, the operator would ensure that miners perform a user seal check, or follow manufacturers' recommended procedures, each time they put on a respirator. The OSHA Respiratory Protection Standard also specifies procedures for continued respirator effectiveness, including maintaining appropriate surveillance of work area conditions and degree of miner exposure or stress. The standard would require mine operators to ensure miners leave the respirator use area: (1) to wash their faces and facepieces as necessary to prevent eye or skin irritation from respirator use; (2) when they detect vapor or gas breakthrough, changes in breathing resistance, or facepiece leakage; and (3) to replace respirator filters, cartridges, or

canister elements. Additionally, the OSHA Respiratory Protection Standard specifies several requirements for protecting miners in IDLH atmospheres, including standby rescue personnel, communication systems, and appropriate atmosphere-supplying respirators.

f. Maintenance and Care of Respirators

Proper care and maintenance of respirators is necessary to ensure they function as designed and protect miner safety and health. The OSHA Respiratory Protection Standard includes specific provisions for respirator cleaning, disinfecting, storage, inspection, and repair. For example, the cleaning and disinfecting provisions state that respirators must be disinfected and cleaned using procedures in Appendix B-2 or equivalent manufacturer procedures. The standard specifies different cleaning intervals based on respirator use: exclusive-use respirators must be cleaned as needed to maintain sanitary conditions, shared respirators must be cleaned between users, and emergency respirators must be cleaned after each use.

The OSHA Respiratory Protection Standard would require that respirators be stored in a manner that will protect them against damage (e.g., contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals) and prevent distortion of the facepiece and exhalation valve. Emergency respirators would be required to be kept accessible to the work area and stored in clearly marked compartments per manufacturer instructions.

The OSHA Respiratory Protection Standard would require inspection of respirators based on their intended use. Routine use respirators would be inspected during cleaning and disinfection, and before each use to verify proper working condition. Emergency respirators would be required to be inspected at least monthly and in accordance with manufacturer recommendations and checked for proper function before and after each use. Emergency escape-only respirators would be inspected before being carried into the workplace. The OSHA Respiratory Protection Standard states that mine operators would inspect respirators to ensure function, tightness of connections, and the condition of the various parts including, but not

limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters, and a check of elastomeric parts for pliability and signs of deterioration.

In addition to the general inspection requirements, the OSHA Respiratory Protection standard would require SCBAs to be inspected monthly. Air and oxygen cylinders would be required to be maintained in a fully charged state and recharged when pressure falls to 90 percent of the manufacturer's recommended level. Operators would need to verify that the regulator and warning devices function properly. Operators would be required to document each emergency respirator inspection with the date, inspector's name, findings, any needed repairs, and the respirator's serial number. This documentation would be required to be kept on a tag attached to the respirator or storage compartment, or in inspection files, until the next inspection.

The OSHA Respiratory Protection Standard would require respirators that fail inspection or are otherwise found to be defective to be removed from service and discarded or repaired in accordance with specific procedures. Repairs would be required to be performed by trained individuals following manufacturer specifications and using NIOSH-approved manufacturer parts.

g. Breathing Air Quality and Use

It is essential that atmosphere supplying respirators, like supplied-air respirators (SAR) and SCBA, operate reliably and deliver high-quality air to avoid serious health hazards. The OSHA Respiratory Protection Standard would require mine operators to provide high purity breathing air for use in all atmosphere supplying respirators, regardless of whether the air is supplied from purchased cylinders or generated by an on-site compressor. Specifically, compressed or liquid oxygen must meet United States Pharmacopoeia standards for medical or breathing oxygen, while compressed breathing air must meet or exceed the Grade D breathing air specifications of ANSI/Compressed Gas Association (CGA) Commodity Specification for Air, G-7.1-1989.

Grade D breathing air is the most commonly cited standard for industrial breathing air, and its specifications are as follows: an oxygen content ranging from 19.5 to 23.5 percent by volume; a condensed hydrocarbon (oil) content of 5 milligrams (mg) per cubic meter (m^3) of air or less; a carbon monoxide (CO) content of 10 parts per million (ppm) or less; a carbon dioxide (CO_2) content of 1,000 ppm or less; and the absence of any noticeable odor.

The OSHA Respiratory Protection Standard would require mine operators who purchase cylinders for breathing air use to obtain a supplier certificate of analysis indicating that the air meets Grade D breathing air quality. The operator would also need to ensure that cylinder moisture content remains at or below a dew point of minus 50 degrees Fahrenheit (at one atmosphere of pressure) and that cylinders are tested and maintained according to the U.S. Department of Transportation (DOT) regulations.

Mine operators utilizing respirable air compressor systems would be subject to specific safety and air quality requirements under the OSHA Respiratory Protection Standard. These requirements mandate that systems must: be positioned to prevent the intake of contaminated air; maintain a dew point at least 10 degrees Fahrenheit below the ambient temperature; be equipped with filters and sorbent beds to remove oil, odors, and other impurities; and have a display tag indicating the most current filter service date and the signature of the authorized person who performed the change. The standard requires employers to keep CO below 10 ppm, use alarms (CO or high-temp) for oil-lubricated compressors, install incompatible couplings to prevent contamination, avoid introducing asphyxiants into lines, and use only NIOSH-approved, properly maintained breathing-gas containers for respirators.

Lastly, the OSHA Respiratory Protection Standard addresses specific safety measures regarding oxygen usage in respiratory protection equipment to prevent fire and explosion hazards. Specifically, compressed oxygen must not be used in air-supplied respirators that were previously used with compressed air. Furthermore, oxygen concentrations exceeding 23.5

percent are strictly reserved for specialized oxygen equipment designed for such conditions, and not for use in standard breathing air systems.

h. Training

Employee training is essential for correct respirator use. The OSHA Respiratory Protection Standard would require mine operators to provide effective training to miners who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. The standard would also require mine operators to provide specific basic information about respirators to miners who choose to voluntarily wear respirators when such use is not required by an existing MSHA standard nor required by the mine operator.

To ensure the proper and safe use of a respirator, the standard would also require mine operators to cover several specific elements, ensuring that miners can demonstrate knowledge of the following: why the respirator is necessary and how improper fit, usage and maintenance can make the respirator ineffective; the limitations and capabilities of the selected respirator; how to properly select cartridges and canisters and know the assigned cartridge and canister change schedules for the devices selected; how to use the respirator effectively in emergency situations; how to inspect, put on and remove, use and check the seals of the respirator; the respirator maintenance and storage procedures; how to recognize medical signs and symptoms that may limit or prevent effective use of the respirator; and the general requirements of OSHA's respiratory protection standard.

i. Program Evaluation

To ensure that the written respiratory protection program is being effectively implemented, the OSHA Respiratory Protection Standard would require mine operators to conduct evaluations of the workplace as necessary. Additionally, the standard would require operators to regularly consult with miners who use respirators to assess the effectiveness of the respiratory protection program and to identify and correct any problems encountered with

respirator use. At a minimum, the assessment must cover respirator fit, appropriate respirator selection, and proper respirator use and maintenance.

j. Recordkeeping

Like ASTM F3387-19, OSHA's Respiratory Protection Standard would require mine operators to establish and retain written information regarding medical evaluations, fit testing, and their respiratory protection programs. Recordkeeping is an important means of verifying operator compliance with respiratory protection program requirements. Records also enhance miner involvement in the program and support operators in their efforts to audit their program's overall effectiveness.

Under 29 CFR 1910.134, mine operators would be required to maintain a written copy of their current respiratory protection program. Operators would also be required to retain written fit testing records of QLFTs and QNFTs administered to miners in accordance with 29 CFR 1910.134. These records would include: 1) name or identification of the miner fit tested; 2) type of fit test performed; 3) make, model and size of respirator tested; 4) date of the fit test; 5) pass/fail results if QLFT is used, or the fit factor or other test result record if a QNFT is used. Fit test records would be required to be retained until the next fit test is administered.

Under 29 CFR 1910.134(m)(1), OSHA requires employers to keep medical evaluation records, including respirator questionnaires and determinations, for the entire period of employment plus 30 years, following the retention rules in the Access to Employee Exposure and Medical Records standard. 29 CFR 1910.1020. MSHA proposes not to adopt this OSHA requirement. Instead, MSHA would require records of written determinations regarding a miner's ability to wear a respirator to be retained and made available for the duration of the miner's employment plus 6 months under §§ 56.5005T, 57.5005T, 60.16, and 72.710. This requirement is consistent with the existing requirements of § 57.5075 and § 60.16.

MSHA requests comments on these proposed recordkeeping requirements.

V. Health Effects Summary

The health outcomes from exposures to respirable crystalline silica were identified in "*Effects of Occupational Exposure to Respirable Crystalline Silica on the Health of Miners*" (MSHA-2023-0001-1579)[26], the standalone health effects document that was published in support of the 2024 Silica Final Rule. The document discussed health research literature concerning the adverse health effects associated with exposure to respirable crystalline silica including silicosis, non-malignant respiratory disease (NMRD), lung cancer, renal disease, and autoimmune diseases. MSHA summarized study findings regarding the relationship between disease and exposure to respirable crystalline silica.

For this proposed rule, MSHA conducted a search of literature published since the 2024 Silica Final Rule and found 195 new studies.[27] MSHA is continuing to review these new studies relevant to occupational exposures and health risks from respirable crystalline silica. However, MSHA has preliminarily determined that none of the new studies altered the findings and conclusions of the 2024 standalone health effects document, which was published in support of the 2024 Silica Final Rule.

MSHA requests comments on this preliminary determination. In particular, MSHA requests whether there are additional peer-reviewed publications not in MSHA's listing of recent studies that MSHA should consider. MSHA requests that commenters submit the additional studies or their citations.

MSHA is considering whether to exempt respirable crystalline silica exposures that result from the mining and processing of sorptive clays and requests comment on such an exemption. In particular, MSHA requests that commenters submit recent peer-reviewed publications and data that address occupational exposures, epidemiological studies, toxicity, and/or human health risks from inhalation exposures to respirable crystalline silica in sorptive clays. MSHA seeks all information on whether the existence or lack of human health risk data from inhalation exposures

[26] The 2024 Health Effects standalone document is available on the 2024 Silica Final Rule docket, as cited; the document is also included in this docket.
[27] A listing of the recent studies identified for consideration by MSHA is included in this docket.

to respirable crystalline silica in the sorptive clay industry is significant. Additionally, MSHA requests information about the mining process in sorptive clay operations including: details about the nature of the overburden material and depth of overburden; the extraction and processing method for sorptive clay operations; evidence that occluded surfaces do not fracture during mining operations; and evidence that the overburden material does not provide a source of unoccluded or fractured respirable crystalline silica in sorptive clay mining operations.

VI. Preliminary Risk Analysis

MSHA's preliminary risk analysis relies on the "*Final Risk Analysis"* (MSHA-2023-0001-1581)[28] standalone document that was published in support of the 2024 Silica Final Rule.

The 2024 final risk analysis quantitatively explored risks associated with five specific health outcomes: silicosis morbidity and mortality, mortality from NMRD, lung cancer, and end stage renal disease (ESRD). These health outcomes were identified in "*Effects of Occupational Exposure to Respirable Crystalline Silica on the Health of Miners"* (MSHA-2023-0001-1579)[29], the standalone health effects document that was published in support of the 2024 Silica Final Rule. The 2024 final risk analysis quantified the health risk to miners exposed, over various hypothetical multi-year periods of employment, to respirable crystalline silica under the exposure limits for MNM and coal miners at the PEL of 50 μg/m^3 and at the action level of 25 μg/m^3. MSHA has preliminarily determined that the hypothetical calculations from the 2024 final risk analysis are still applicable for this preliminary risk analysis because MSHA is not proposing any changes to the PEL of 50 μg/m^3 and the action level of 25 μg/m^3. In order to estimate the health effects of the proposed rule or possible regulatory alternatives, MSHA requests empirical evidence regarding length of miner employment or, more precisely, length over time of miner exposure to respirable crystalline silica.

[28] The 2024 Final Risk Analysis standalone document is available on the 2024 Silica Final Rule docket, as cited; the document is also included in this docket.
[29] The 2024 Health Effects standalone document is available on the 2024 Silica Final Rule docket, as cited; the document is also included in this docket.

VII. Preliminary Regulatory Impact Analysis

A. Introduction

Executive Order (E.O.) 12866, "Regulatory Planning and Review" 58 FR 51735 (Oct. 4, 1993), requires agencies, to the extent permitted by law, to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits; (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

E.O. 13563, "Improving Regulation and Regulatory Review," 76 FR 3821 (Jan. 21, 2011), requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. E.O.13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, reduce uncertainty, and use the best, most innovative, and least burdensome tools for achieving regulatory ends. E.O. 13563 directs agencies to propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs; the regulation is tailored to impose the least burden on society, consistent with achieving the regulatory objectives; and in choosing among alternative regulatory approaches, the agency has selected those approaches that maximize net benefits.

E.O. 12866 and E.O. 13563 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that

maximize net benefits. E.O. 13563 emphasizes the importance of quantifying both costs and benefits, reducing costs, harmonizing rules, and promoting flexibility.

Under section 6(a) of E.O. 12866, the Office of Management and Budget's (OMB's) Office of Information and Regulatory Affairs (OIRA) determines whether a regulatory action is significant and whether Agencies are required to submit the regulatory action to OIRA for review. Under section 3(f) of E.O. 12866, a "significant regulatory action" is a regulatory action that is likely to result in a rule that may:

(1). Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities (also referred to as economically significant);

(2). Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3). Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients; or

(4). Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the E.O.

To comply with E.O.s 12866 and 13563, MSHA has prepared a preliminary regulatory impact analysis (PRIA) for this proposed rule. The purpose of the PRIA is to provide a profile of the mining industry impacted by the proposed rule and to estimate the cost savings that the mining industry expects to achieve while in compliance with the proposed rule. MSHA requests comments on all estimates of costs and benefits presented in this PRIA and on the data, assumptions, and methodologies the Agency used to develop the cost and benefit estimates.

This PRIA relies extensively on detailed supporting data and discussions presented in the standalone final regulatory impact analysis (FRIA) of the 2024 Silica Final Rule, including the

profile of the mining industry and estimated costs and benefits. The standalone FRIA is available in the rulemaking docket at *www.regulations.gov*, docket number MSHA-2023-0001.

B. Miners and the Mining Industry

The proposed rule would affect mine operators and miners. This section provides information on the structure of the MNM and coal mining industries, including the revenue, number of mines and miners, employment by commodity and size, and economic characteristics of MNM and coal mines. The data come from the U.S. Department of the Interior (DOI), U.S. Geological Survey (USGS); U.S. Department of Labor (DOL), the MSHA Office of Educational Policy and Development and the MSHA Office of Program Evaluation and Information Resources; the Statistics of U.S. Businesses (SUSB); and the Energy Information Administration (EIA).

1. Structure of the Mining Industry

The mining industry can be divided into two major sectors: (1) MNM mines and (2) coal mines, with further distinction made regarding type of operation: (1) underground mines and (2) surface mines. The MNM mining sector is made up of metal mines (e.g., copper, iron ore, gold, silver) and nonmetal mines. Nonmetal mines can be further categorized into four commodity groups: (1) nonmetal (mineral) materials such as clays, potash, soda ash, salt, talc, and rare earth elements; (2) stone, including granite, limestone, dolomite, sandstone, slate, and marble; (3) crushed limestone; and (4) sand and gravel, including industrial sands.

MSHA tracks several characteristics of mines and categorizes mines by employment size. In this industry profile, MSHA has categorized mines into the following size groups: mines that employ: (1) 1 to 20 miners; (2) 21 to 50 miners; (3) 51 to 100 miners; (4) 101 to 500 miners; and (5) 501 or more miners.[30] MSHA also collects data on independent contractor firms and their

[30] Miner employment is based on the information submitted quarterly through the MSHA Form 7000-2, excluding Subunit 99 – Office (professional and clerical employees at the mine or plant working in an office); https://www.msha.gov/sites/default/files/Support_Resources/Forms/7000-2_0.pdf.

employed contract miners' hours worked. Contract miners may work at any mine and more than one mine within a year.

Table VII-1 presents an overview of the mining industry by commodity and size: coal production in short tons, estimated revenues, number of mines, employment, and hours worked for all mines that were active in 2019.[31] To ensure comparability with the 2024 Silica Final Rule, MSHA chooses to use 2019 data for the same mine coverage and estimation calibration.[32] The table shows that while the MNM sector accounts for 91 percent of active mines, it employs 75 percent of miners.

[31] To be considered 'active' a mine must have reported at least 2,000 hours worked by miners in 2019. Employment includes all subunits except for (99) – "Office Workers at Mine Site."

[32] In the 2024 Silica Final Rule, MSHA chose to use 2019 data in order to capture a 'typical' year for the mining industry, one that was not impacted by the pandemic. MSHA compared mine production information between 2019 and 2024 and did not observe any significant differences in the number of mines and miners.

Table VII-1. Profile of MNM and Coal Mines in 2019, by Mine Size

Mine Category	Range by Miner Employment	Tons (millions)		Revenues [a]		Number of Mines [b]		Production Employees [b]		Production Hours (thousands) [b]		Total Employment [b]	
		Millions	*Percent*	Millions in 2024 $	*Percent*	Number	*Percent*	Number	*Percent*	Number	*Percent*	Number	*Percent*
Metal	Emp <= 20	NA	NA	$608.9	*1.9%*	157	*56.1%*	851	*2.3%*	1,433.8	*1.9%*	999	*2.5%*
Metal	20 < Emp <= 100	NA	NA	$1,665.1	*5.1%*	39	*13.9%*	1,947	*5.3%*	3,921.3	*5.1%*	2,251	*5.6%*
Metal	100 < Emp <= 500	NA	NA	$13,628.5	*42.0%*	62	*22.1%*	15,060	*40.7%*	32,094.2	*42.0%*	16,508	*40.7%*
Metal	500 > Emp	NA	NA	$16,546.2	*51.0%*	22	*7.9%*	19,168	*51.8%*	38,965.3	*51.0%*	20,771	*51.2%*
Metal	***Total***	***NA***	***NA***	***$32,448.7***	***100.0%***	***280***	***100.0%***	***37,026***	***100.0%***	***76,414.7***	***100.0%***	***40,529***	***100.0%***
Nonmetal	Emp <= 20	NA	NA	$ 3,882.5	*14.4%*	645	*71.9%*	3,694	*16.3%*	6,397.5	*14.4%*	4,237	*16.6%*
Nonmetal	20 < Emp <= 100	NA	NA	$10,805.4	*40.1%*	207	*23.1%*	8,921	*39.3%*	17,805.0	*40.1%*	10,065	*39.3%*
Nonmetal	100 < Emp <= 500	NA	NA	$10,008.2	*37.1%*	42	*4.7%*	8,220	*36.2%*	16,491.4	*37.1%*	9,163	*35.8%*
Nonmetal	500 > Emp	NA	NA	$2,258.6	*8.4%*	3	*0.3%*	1,845	*8.1%*	3,721.6	*8.4%*	2,134	*8.3%*
Nonmetal	***Total***	***NA***	***NA***	***$26,954.6***	***100.0%***	***897***	***100.0%***	***22,680***	***100.0%***	***44,415.4***	***100.0%***	***25,599***	***100.0%***
Sand and Gravel	Emp <= 20	NA	NA	$7,560.4	*69.7%*	5,879	*96.7%*	23,887	*75.0%*	39,673.3	*69.7%*	27,262	*75.9%*
Sand and Gravel	20 < Emp <= 100	NA	NA	$2,755.5	*25.4%*	188	*3.1%*	6,703	*21.1%*	14,459.5	*25.4%*	7,320	*20.4%*
Sand and Gravel	100 < Emp <= 500	NA	NA	$529.3	*4.9%*	10	*0.2%*	1,247	*3.9%*	2,777.6	*4.9%*	1,337	*3.7%*
Sand and Gravel	500 > Emp	NA	NA	$0.0	*0.0%*	0	*0.0%*	0	*0.0%*	0.0	*0.0%*	0	*0.0%*
Sand and Gravel	***Total***	***NA***	***NA***	**$10,845.2**	***100.0%***	***6,077***	***100.0%***	***31,837***	***100.0%***	***56,910.5***	***100.0%***	***35,919***	***100.0%***
Stone	Emp <= 20	NA	NA	$4,406.9	*28.5%*	2,002	*83.1%*	11,198	*31.7%*	20,035.5	*28.5%*	12,563	*31.5%*
Stone	20 < Emp <= 100	NA	NA	$6,783.9	*43.8%*	339	*14.1%*	14,779	*41.9%*	30,842.4	*43.8%*	16,824	*42.2%*
Stone	100 < Emp <= 500	NA	NA	$4,049.7	*26.2%*	67	*2.8%*	8,762	*24.8%*	18,411.6	*26.2%*	9,896	*24.8%*
Stone	500 > Emp	NA	NA	$241.7	*1.6%*	1	*0.0%*	539	*1.5%*	1,098.8	*1.6%*	602	*1.5%*
Stone	***Total***	***NA***	***NA***	***$15,482.2***	***100.0%***	***2,409***	***100.0%***	***35,278***	***100.0%***	***70,388.3***	***100.0%***	***39,885***	***100.0%***
Crushed Limestone	Emp <= 20	NA	NA	$7,040.1	*45.8%*	1,555	*83.5%*	11,771	*48.8%*	22,834.9	*45.8%*	13,495	*49.7%*
Crushed Limestone	20 < Emp <= 100	NA	NA	$6,984.8	*45.5%*	293	*15.7%*	10,480	*43.5%*	22,655.5	*45.5%*	11,641	*42.9%*
Crushed Limestone	100 < Emp <= 500	NA	NA	$1,329.8	*8.7%*	14	*0.8%*	1,856	*7.7%*	4,313.4	*8.7%*	2,002	*7.4%*
Crushed Limestone	500 > Emp	NA	NA	$0.0	*0.0%*	0	*0.0%*	0	*0.0%*	0.0	*0.0%*	0	*0.0%*
Crushed Limestone	***Total***	***NA***	***NA***	***$15,354.8***	***100.0%***	***1,862***	***100.0%***	***24,107***	***100.0%***	***49,803.8***	***100.0%***	***27,138***	***100.0%***

MNM Total	**Emp <= 20**	**NA**	**NA**	**$23,498.7**	***23.2%***	**10,238**	***88.8%***	**51,401**	***34.1%***	**90,375.0**	***30.3%***	**58,556**	***34.6%***
MNM Total	**20 < Emp <= 100**	**NA**	**NA**	**$28,994.8**	***28.7%***	**1,066**	***9.2%***	**42,830**	***28.4%***	**89,683.7**	***30.1%***	**48,101**	***28.5%***
MNM Total	**100 < Emp <= 500**	**NA**	**NA**	**$29,545.6**	***29.2%***	**195**	***1.7%***	**35,145**	***23.3%***	**74,088.3**	***24.9%***	**38,906**	***23.0%***
MNM Total	**500 > Emp**	**NA**	**NA**	**$19,046.4**	***18.8%***	**26**	***0.2%***	**21,552**	***14.3%***	**43,785.7**	***14.7%***	**23,507**	***13.9%***
MNM Total	***Total***	***NA***	***NA***	***$101,085.5***	***100.0%***	***11,525***	***100.0%***	***150,928***	***100.0%***	***297,932.6***	***100.0%***	***169,070***	***100.0%***
Coal	Emp <= 20	16.6	*2.3%*	$1,215.3	*3.9%*	707	*63.9%*	4,358	*8.5%*	9,077.4	*7.7%*	4,611	*8.7%*
Coal	20 < Emp <= 100	66.3	*9.4%*	$3,891.0	*12.6%*	271	*24.5%*	11,814	*22.9%*	27,591.7	*23.5%*	12,145	*22.9%*
Coal	100 < Emp <= 500	366.8	*51.9%*	$17,388.3	*56.2%*	116	*10.5%*	26,145	*50.7%*	59,897.7	*51.0%*	26,818	*50.6%*
Coal	500 > Emp	256.4	*36.3%*	$8,445.8	*27.3%*	12	*1.1%*	9,256	*17.9%*	20,962.2	*17.8%*	9,392	*17.7%*
Coal	***Total***	***706.1***	***100.0%***	***$30,940.3***	***100.0%***	***1,106***	***100.0%***	***51,573***	***100.0%***	***117,529.0***	***100.0%***	***52,966***	***100.0%***

NA = Not available

[a] Coal Revenues were calculated using MSHA Production Figures in Short Tons by Rank: 650.3 million tons Bituminous Coal and Subbituminous, 53.2 million tons Lignite Coal, 2.6 million tons Anthracite Coal; and EIA price's per short ton by Coal Rank: EIA Annual Coal Report 2019; Table 31 Average Sales Price of Coal by State And Rank, 2019; US Total: $58.93/ton Bituminous Coal, $14.01/ton Subbituminous, $19.86/ton Lignite Coal, $102.22/ton Anthracite Coal; https://www.eia.gov/coal/annual/archive/0584_2019.pdf. The revenues for MNM commodities are calculated by applying the proportion of revenues represented by each commodity among all MNM commodities in the 2017 SUSB data and applying that proportion to the 2019 production value for all industrial minerals reported by USGS.

Revenues inflated from 2019 dollars to 2024 dollars using the annual U.S. GDP Price Deflator. The U.S. GDP Price Deflator is obtained from U.S. Bureau of Economic Analysis, Gross Domestic Product: Implicit Price Deflator, Series ID GDPDEF#0. Available at https://fred.stlouisfed.org/series/GDPDEF#0, last accessed on 12/17/2025. MSHA determines the annual GDP Price Deflator by calculating the average of the quarterly GDP Price Deflators for each quarter within a calendar year.

[b] The estimated number of current and future mines, miners, and production hours are obtained from MSHA Standardized Information System (MSIS).

a. Metal Mining

There are 24 groups of metal commodities mined in the U.S. Metal mines, representing about 2.4 percent (280 out of 11,525) of all MNM mines and employed about 24.5 percent of all MNM miners. Of these 280 mines, 157 employed 20 or fewer miners and 22 employed more than 500 miners. Additionally, the 2019 MSHA data show that there were 13,792 contract miners in the metal mining industry.

b. Nonmetal (Mineral Mining)

This analysis identifies 35 nonmetal commodities mined in the U.S., not including stone, and sand and gravel. Nonmetal mines represented about 7.8 percent of all MNM mines and employed roughly 15 percent of all MNM miners. The majority of nonmetal mines (71.9 percent) employed fewer than 20 miners and less than 1 percent employed more than 500 employees. In 2019, there were 11,346 contract miners in the nonmetal mining industry.

c. Stone Mining

The stone mining subsector includes eight different stone commodities. Seven of the eight are further classified as either dimension stone or crushed and broken stone. Stone mines made up 20.9 percent of all MNM mines and employed 23.4 percent of all MNM miners. The majority of these mines (83.1 percent) employed fewer than 20 miners. In 2019, there were 18,559 contract miners in the stone mining industry.

d. Crushed Limestone

Crushed limestone mines made up 16.2 percent of all MNM mines and employed about the same percentage (16.0 percent) of all MNM miners. Of the 1,862 crushed limestone mines, 83.5 percent employed fewer than 20 miners, and there were no crushed limestone mines that employed over 500 miners. In 2019, there were 9,605 contract miners in the crushed limestone mining industry.

e. Sand and Gravel Mining

Sand and gravel mines accounted for 52.7 percent of all MNM mines and employed 21.1 percent of all MNM miners. Nearly all (96.7 percent) of these mines employed fewer than 20 employees. In 2019, the MSHA data show that there were 7,512 contract miners in the sand and gravel mining industry.

f. Coal

In the coal sector, 707 mines (63.9 percent) employed fewer than 20 miners. Overall, coal mine employment in 2019 was 52,966. Of those, 51,573 of the employment were miners and the remaining 1,393 were office workers. Additionally, there were a total of 22,003 contract miners in the coal mining industry in 2019.

2. Economic Characteristics of the Metal/Nonmetal Mining Industry

The value of all MNM mining output in 2019 is estimated at $101.1 billion in 2024 dollars (U.S. DOI, 2019), which is measured in 2022 dollars and updated to 2024 dollars using the U.S. GDP Price Deflator. Metal mines, which include iron, gold, copper, silver, nickel, lead, zinc, uranium, radium, and vanadium mines, contributed $32.4 billion. In the USGS Mineral Commodity Summaries, nonmetals, stone, sand and gravel, and crushed limestone are combined into one commodity group called industrial minerals. MSHA estimates the production value of each individual commodity by applying the proportion of revenues of each commodity in the SUSB to the 2019 production value for all industrial minerals reported by USGS. This approach yields the following values in 2024 dollars: metal production is valued at $32.4 billion, nonmetal production at $27.0 billion, stone mining at $15.5 billion, sand and gravel at $10.8 billion, and crushed limestone at $15.4 billion.

3. Economic Characteristics of the Coal Industry

Production in the U.S. coal sector amounted to 706.1 million tons in 2019. To estimate coal revenues in 2019, MSHA combines production estimates with prices per ton. Mine production data is taken from MSHA quarterly data and the coal price per ton is taken from the

2019 EIA Annual Coal Report. As shown in Table VII–1, total coal revenues in 2019 are estimated to be $25.6 billion in 2022 dollars, which is updated to $30.9 billion in 2024 dollars using the U.S. GDP Price Deflator.

C. Cost-Benefit Analysis

The baseline for this PRIA analysis is the standards for respirable crystalline silica or quartz exposure in 30 CFR parts 56, 57, 70, 71, 72, 75, and 90 prior to the publication of the 2024 Silica Final Rule.

Compliance costs of the 2024 Silica Final Rule are built on the framework of the standalone FRIA of the 2024 Silica Final Rule. In that standalone FRIA, MSHA estimated compliance costs by provision:

- exposure monitoring (§§ 60.12 and 60.13);
- engineering, improved maintenance and repair, and administrative controls (§ 60.11);
- respiratory protection (e.g., when miners need temporary respiratory protection from overexposure) (§ 60.14);
- medical surveillance (§ 60.15); and
- incorporation of ASTM F3387-19 (see *FRIA Table ES-1* for more details) (§ 60.14).

MSHA estimated that the MNM sector represents 90.9 percent of the annualized compliance costs and the coal sector represents 9.1 percent (see *FRIA Table ES-2*). The costs of the 2024 Silica Final Rule are adjusted from values expressed in 2022 dollars (as reported in the FRIA of the 2024 Silica Final Rule) to values in 2024 dollars in this PRIA analysis for comparison purposes. MSHA also updated the compliance date to be the first year after implementing the proposed rule for both MNM and coal mines.

This PRIA analysis presents the estimated compliance costs in the MNM and coal sectors under the proposed rule. The proposed changes provide clarifications for the regulated community and updates to requirements for methods of compliance, exposure monitoring, respiratory protection, medical surveillance, and recordkeeping. MSHA estimates compliance

costs of the proposed rule by provision. The cost components are similar to those found in the 2024 Silica Final Rule's FRIA but the estimation methodology has been updated in this PRIA to reflect the following:

- Implement exposure controls (§ 60.11): same requirements as the 2024 Silica Final Rule;
- Conduct exposure monitoring (§ 60.12):
    - update requirements for first-time sampling and eliminate second-time sampling (§ 60.12(a)(1));
    - add as-needed sampling as frequently as necessary (§ 60.12(a)(2));
    - reduce above-action-level sampling and add respirator availability when sampling between the action level and the PEL (§ 60.12(a)(3));
    - report all samples over the PEL to MSHA (§ 60.12(a)(4));
    - eliminate post-evaluation sampling; and
    - eliminate process change evaluations.
- Take corrective actions (§ 60.13): same requirements as the 2024 Silica Final Rule.
- Require respiratory protection (§ 60.14(a) and (b)): clarify respiratory protection requirements at MNM mines.
- Update medical surveillance (§ 60.15):
    - change from mandatory to voluntary examinations for new MNM miners,
    - add mandatory examinations for all miners (MNM and coal) exposed above the PEL.
- Replace ASTM standard with the OSHA Respiratory Protection Standard (§ 60.14(c)(2)): clear guidelines for voluntary respirator use and reduced administrative complexity.

MSHA estimates the annualized compliance costs of the proposed rule (in the hypothetical absence of the 2024 Silica Final Rule) range from $71.2 million to $79.3 million,

depending on the discount rate used (see *Table VII-2*). Of this total, about 91 percent would be incurred by mine operators in the MNM sector and 9 percent by mine operators in the coal sector. The difference in cost between the MNM and coal sectors is driven by the much larger number of MNM mines, as well as differences in mine size and exposures.

Table VII-2. Summary of Estimated Annualized Compliance Costs by Sector, Proposed Rule (in millions of 2024 dollars)

Sector	Number of Mines [a]	0 Percent Discount Rate		3 Percent Discount Rate		7 Percent Discount Rate	
		Annualized Cost	Percent	Annualized Cost	Percent	Annualized Cost	Percent
Total, All Mines	***12,631***	***$71.22***	***100.0%***	***$74.43***	***100.0%***	***$79.38***	***100.0%***
Metal/ Nonmetal, Total	11,525	$64.97	91.2%	$68.02	91.4%	$72.70	91.6%
Coal, Total	1,106	$6.25	8.8%	$6.41	8.6%	$6.67	8.4%

Note: [a] The estimated number of current and future mines are based on 2019 data (MSHA, 2024d) and are assumed to have remained constant throughout the implementation of the proposed rule.

Based on these proposed requirements, MSHA calculates cost savings from the proposed rule by comparing compliance costs characterized by the presence of the 2024 rule and costs under the proposed rule. The proposed rule is projected to generate total annualized cost savings of $28.7 million in 2024 dollars at a discount rate of 7 percent. The breakdown of the annualized compliance cost savings by provision is as follows:

- Exposure monitoring: $24.9 million, 87 percent of total cost savings;
- Exposure controls: no change in compliance cost and no cost savings;
- Respiratory protection: no change in compliance cost and no cost savings;
- Medical surveillance: $3.9 million, 13 percent of total cost savings; and
- Updates to OSHA Respiratory Protection Standard: no change in compliance cost and no cost savings.

Of the estimated annualized compliance cost savings of $28.7 million, the MNM sector would experience $26.3 million (approximately 92 percent) and the coal sector would experience $2.43 million (approximately 8 percent).

MSHA presents the methods, data, and rationale used to estimate the expected compliance costs of the proposed rule, including exposure monitoring, exposure controls, additional respiratory protection, medical surveillance, and changes in respiratory protection practices due to the adoption by reference of the OSHA Respiratory Protection Standard.

1. Exposure Monitoring (§ 60.12)

i. 2024 Silica Final Rule

Under the standards established by the 2024 Silica Final Rule, mine operators are required to conduct five types of exposure monitoring, including: first- and second-time sampling, above-action-level sampling, corrective actions sampling, periodic evaluations, and post evaluation sampling.

ii. Proposed Rule

MSHA models the following changes from the 2024 Silica Final Rule in this PRIA:

First-time Sampling:

- Only sample miners who are or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.
- Remove mandatory second-time sampling.

Above-action-level Sampling:

- (new) Make approved respirators available before the start of the next work shift if sampling falls between the action level and the PEL.
- End the required availability of approved respirators if one sample is below the action level.

Corrective Actions Sampling:

- No change.

Periodic Evaluations and Post Evaluation Sampling:

- Eliminated.

(new) As-needed Sampling:

- Conduct sampling as frequently as necessary to assess the full-shift, 8-hour TWA exposure of respirable crystalline silica to each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.

Under proposed § 60.12, mine operators would conduct first-time sampling, above-action-level sampling, corrective actions sampling, and as-needed sampling. In this section, MSHA presents its analysis and estimated costs attributable to exposure monitoring under the proposed rule.

Mines Impacted by Exposure Monitoring Requirements

For this PRIA, MSHA uses the same profile of mines impacted by exposure monitoring requirements as the standalone FRIA of the 2024 Silica Final Rule.

All active mines would be required to conduct exposure monitoring; however, MSHA expects that the costs for exposure monitoring vary by mine size and the number of quarters they are in operation. Table VII-3 describes active mines affected by the exposure monitoring requirements under proposed § 60.12 and characterizes mines by the number of quarters in which they were active in 2019 (i.e., whether a mine reported at least 520 miner working hours in any quarter of 2019).

Table VII-3. Mines and Miners, Activity by Quarter, by Sector, 2019

Sector and Mine Size	Total		Active 4 Quarters		Active 3 Quarters	
	Mines	Miners Including Contractor Miners	Mines	Miners Including Contractor Miners	Mines	Miners Including Contractor Miners
All Mines						
Miners ≤ 20	10,945	75,737	7,203	64,330	2,077	7,505
20 < Miners ≤ 100	1,337	78,170	1,298	76,208	33	1,592
100 < Miners ≤ 500	311	87,768	310	87,599	0	0
500 < Miners	38	43,104	38	43,104	0	0
Total	***12,631***	***284,779***	***8,849***	***271,240***	***2,110***	***9,097***
MNM						
Miners ≤ 20	10,238	69,520	6,764	59,495	1,978	6,817
20 < Miners ≤ 100	1,066	61,316	1,047	60,359	15	726
100 < Miners ≤ 500	195	50,469	194	50,299	0	0
500 < Miners	26	29,899	26	29,899	0	0
Total	***11,525***	***211,203***	***8,031***	***200,052***	***1,993***	***7,544***
Coal						

Miners ≤ 20	707	6,217	439	4,835	99	688
20 < Miners ≤ 100	271	16,854	251	15,849	18	866
100 < Miners ≤ 500	116	37,299	116	37,299	0	0
500 < Miners	12	13,205	12	13,205	0	0
Total	***1,106***	***73,576***	***818***	***71,188***	***117***	***1,554***
	Active 2 Quarters		**Active 1 Quarter**			
All Mines						
Miners ≤ 20	1,087	2,776	578	1,127		
20 < Miners ≤ 100	2	140	4	230		
100 < Miners ≤ 500	0	0	1	170		
500 < Miners	0	0	0	0		
Total	***1,089***	***2,916***	***583***	***1,526***		
MNM						
Miners ≤ 20	1,004	2,344	492	864		
20 < Miners ≤ 100	0	0	4	230		
100 < Miners ≤ 500	0	0	1	170		
500 < Miners	0	0	0	0		
Total	***1,004***	***2,344***	***497***	***1,264***		
Coal						
Miners ≤ 20	83	432	86	263		
20 < Miners ≤ 100	2	140	0	0		
100 < Miners ≤ 500	0	0	0	0		
500 < Miners	0	0	0	0		
Total	***85***	***572***	***86***	***263***		

Notes: To be considered active a mine must have reported at least 520 hours in a quarter; excluding Subunit 99 – Office (professional and clerical employees at the mine or plant working in an office).
The number of contractor miners by mine size is estimated by using the same distribution as miners by mine size. The small discrepancies in total numbers of miners (including contractor miners) are due to rounding in the numbers of contractor miners.

Monitoring Costs

MSHA estimates total sampling costs as a function of several factors: the unit cost of sampling, which is made up of labor costs (time and hourly wage of miners and the persons conducting sampling), laboratory costs for analyzing the samples, and clerical costs for recording the results; the number of samples that constitute the required representative fraction, each time the operator conducts sampling; and the frequency with which operators would be assumed to carry out different types of monitoring. Details of the cost components are:

- Labor costs:
  - Sampling time: time taken to prepare for and take the samples.
  - Lost work time: time lost from work to equip a miner with a sampling device.
  - Recordkeeping time: time to record and report sample results.
- Laboratory analysis fees.

The number of samples is determined by evaluating the following factors:

- Representativeness: when several miners perform the same tasks on the same shift and in the same work area, the fraction of those miners sampled to obtain a representative sample, which MSHA estimated based on mine employment and occupation profiles.
- Type of exposure monitoring (i.e., above-action-level sampling, corrective actions sampling, and as-needed sampling).
- Exposure level (i.e., below the action level, between the action level and the PEL, or above the PEL).

To calculate total sampling costs under the proposed rule, MSHA estimates the number of samples taken based on the type of sampling. For example, exposure levels affect sampling costs because under the proposed rule one sample below the action level would be needed to cease above-action-level sampling. The frequency of corrective actions sampling is based on the exposure level, which is determined by previous samples.

Table VII-4 summarizes the major cost components of each type of monitoring under proposed § 60.12, and how the costs of each of the types of monitoring measures are estimated. In addition, the table summarizes the changes of each component under the proposed rule. MSHA's estimates for individual cost components are based on market research, exposure data, operator data, and Agency experience.

Table VII-4. Exposure Monitoring Estimation Methodology, Proposed Rule

Exposure Monitoring Requirement [a]	Determination of Cost per Sample [a], [b]	Number of Samples [a]	Condition for Exposure Monitoring Requirement and Frequency [a]
First-time sampling	Sampling labor cost + lost work time + recording time + laboratory fees	Representative sample of all miners that are or may reasonably be expected to be exposed at or above the action level, by mine size	All mines Only sample once if below the action level

Above-action-level sampling	Sampling labor cost + lost work time + recording time + laboratory fees	Miners who meet conditions for as-needed sampling × percent of miners needed for representative sample, by mine size	Miners between the action level and the PEL Sampling frequency - 4 Quarters: Once every 6 months 3 Quarters: Once every 9 months 2 Quarters: Once every 12 months 1 Quarter: Once every 24 months Cease sampling if one sample below the action level
Corrective actions sampling	Sampling labor cost + lost work time + recording time + laboratory fees	Sample results above the PEL × 1.25	Sampling after corrective actions are taken because first-time, above-action-level, or as-needed samples above the PEL Stop sampling if one post-corrective action sample at or below the PEL
Periodic evaluation			Removed under the proposed rule
Post-evaluation sampling			Removed under the proposed rule
As-needed Sampling	Sampling labor cost + lost work time + recording time + laboratory fees	Miners who are or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level	Sampling frequency - 4 Quarters: Once every 12 months 3 Quarters: Once every 18 months 1 or 2 Quarters: Once every 24 months

Notes: [a] Throughout this table, miners refer to both miners (excluding contract miners) and contract miners.
[b] Lost work time, recording time, and laboratory cost fees as presented in Table VII-5 and are constant within each commodity type (coal, metal, nonmetal) across all mine sizes. Sampling labor costs are constant within each commodity but vary by mine size because there is a fixed component (e.g., the cost of an IH) that is spread over more samples as mine size increases.

Labor Costs

The largest component of sampling cost is the labor time required to conduct the activities. For sampling, this includes the time needed to prepare for sampling, take the samples, and perform recordkeeping tasks on the results. Sampling takes time, which is valued at the hourly wage of the person wearing the sampling equipment and the person conducting the sampling. To err on the side of overestimation, MSHA assumed that in MNM mines, sample

preparation and collection would be performed by an industrial hygienist (IH). The IH may be an in-house specialist or an external consultant.[33] As a national average, the IH consultant is assumed to charge $1,708 per day, including travel and report preparation costs. The time for the in-house IH is valued at their loaded average hourly wage. MSHA assumed that half of MNM mine operators would hire a contract IH, while the other half would use an on-staff IH for sampling. For coal mines, miners certified to perform sampling under §§ 70.202, 71.202, and 90.202 can conduct the sampling required under the proposed rule. MSHA assumed coal mine operators would use certified miners for sample preparation and collection; therefore, the average labor cost for coal mine sampling is less than 40 percent of that for MNM mine sampling.

In addition to the labor time of the person conducting sample preparation and collection, there are other activities associated with sampling which cost labor time. Time miners spend being equipped with a sampling device is time they do not spend working. MSHA assumes time lost to work is one half hour of labor time valued at the average loaded hourly wage of mine "Extraction Workers" (Standard Occupational Code 47-5000).

MSHA assumes that recordkeeping takes 15 minutes per sample, which is valued at the average loaded hourly wage of mine "Occupational Health and Safety Specialists" (Standard Occupational Code 19-5011). MSHA assumes an additional 2 minutes per sample would be needed for the mine operator to report sample results above the PEL to the MSHA District Manager. Because only a fraction of sample results would be reported to the District Manager, the effective time allotted is substantially larger; for example, if 50 percent of sample results are reported to MSHA, this 2-minute estimate effectively allots 4 minutes per sample that is actually reported.

[33] Some MNM mines may train their miners or other in-house employees to conduct sampling. In such scenarios, an IH would not be used and the labor cost of sampling would be based on the loaded hourly wage for the participating employee.

MSHA also assumes the personnel conducting sampling can collect 2, 3, and 4 samples per day at small, medium, and large mines, respectively. This determines the number of days needed to complete sampling at a mine, and therefore directly affects the labor costs of sampling.

The average labor cost of exposure monitoring is summarized in Table VII-5.

Table VII-5. Sampling Labor Cost, Average Unit Costs

Labor cost		
Sampling labor cost Metal Mine Nonmetal Mine Coal Mine	 $1,172* per day sampling $1,133* per day sampling $425 per day sampling *The average of using an independent IH contractor ($1,708 per day) and using an in-house IH ($635 for metal mines and $559 for nonmetal mines)	Preparing and setting up sampling equipment; collecting samples; sending samples to laboratory; recording results
Lost work time due to sampling Metal Mine Nonmetal Mine Coal Mine	 $27 per miner sampled $22 per miner sampled $27 per miner sampled	30 minutes of "Extraction Worker" valued at loaded hourly wage
Recordkeeping time due to sampling Metal Mine Nonmetal Mine Coal Mine	 $22 per sample $20 per sample $24 per sample	17 minutes of IH valued at loaded hourly wage
Laboratory fees for sample analysis Laboratory fee	 $159 per sample	Processing samples and reporting results

Laboratory Fees for Sample Analysis

MSHA estimates that laboratory analysis would cost the mine operator $159 per sample. This includes the cost of packing and shipping the sample to the lab, the laboratory analysis, and reporting sample results to the operator.

Number of Samples – Representative Sampling

Mine operators would be required to conduct sampling systematically to ensure representativeness and sufficient miner coverage. Because this determines the minimum number of samples required each time sampling is carried out, it is a major determinant of sampling costs. Where several miners perform the same tasks on the same shift and in the same work area, the mine operator may sample a representative fraction (e.g., at least two) of these miners to meet the sampling requirements. MSHA estimates for the number of miners considered a

representative sample are based on the size of the mine. In small mines that employ 20 or fewer miners (including contract miners), MSHA assumes that a sample comprising at least 50 percent of miners would be necessary to collect a representative sample. In medium-sized mines with 20 to 100 miners, the assumption is that a minimum of 25 percent of miners would need to be sampled for the sample to be representative. In large mines with 100 or more miners, the Agency assumes that a minimum of 15 percent of miners would need to be sampled for the sample to be representative.

Frequency of Exposure Monitoring – Number of Samples

Another component of sampling cost is the frequency with which it must be performed as not all mines operate year-round. Except for first-time sampling, MSHA adjusted all types of sampling for mines that operate fewer than four quarters per year. Each mine would be assumed to take sampling with a frequency equal to the number of quarters the mine is open. For example, mines which are open only two quarters per year would conduct sampling twice during a calendar year. Portable mines are not exempt from the requirements. For corrective actions sampling, sampling frequency depends on sample results as specified by MSHA's exposure monitoring requirements.

Trends in Sample Results and Sampling Costs

Under proposed § 60.12, MSHA expects the percentage of samples that exceed the action level or exceed the PEL would decline over the first several years following promulgation. The decline would be due to several factors: first, mine operators would gain experience and incur increased maintenance and repair to reduce exposure levels to below the action level so they may limit above-action-level sampling. Second, some engineering controls are likely to reduce exposures below the PEL and/or the action level. Third, improving the control of respirable crystalline silica dust in part of the mine is likely to reduce exposure elsewhere in the mine. The combination of these effects is especially observable in the coal industry. Although the 2024

Silica Final Rule established a PEL of 50 µg/m^3, less than 20 percent of samples at coal mines exceed the action level (see *Table VII-6*).

MSHA estimates the percentages of samples exceeding the action level and the PEL in the first year of compliance based on its historical exposure profile developed using the Agency's compliance sampling data. Because no available data indicate the yearly rate at which mine operators would reduce miner exposures to levels below the action level, MSHA assumed the percentage of samples exceeding the action level and the PEL would decline linearly until reaching a steady value in Year 7 and subsequent years.

Table VII-6. Estimated Percentage of Sample Results Taken by Type and Year

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Years 7 - 60
Percent of samples ≥ 25 µg/m^3							
All Mines [a]	***32.2%***	***29.3%***	***26.5%***	***23.6%***	***20.7%***	***17.9%***	***15.0%***
Metal/Nonmetal [b]	36.8%	33.2%	29.5%	25.9%	22.3%	18.6%	15.0%
Coal	19.0%	18.3%	17.7%	17.0%	16.3%	15.7%	15.0%
Percent of samples > 50 µg/m^3							
All Mines [a]	***14.8%***	***13.5%***	***12.2%***	***11.0%***	***9.7%***	***8.5%***	***7.2%***
Metal/Nonmetal [b]	18.0%	16.3%	14.7%	13.0%	11.3%	9.7%	8.0%
Coal	5.5%	5.4%	5.3%	5.3%	5.2%	5.1%	5.0%

Notes: [a] Estimated as a weighted average of results for MNM mines and coal mines.
[b] Estimated as a weighted average of results for the five commodity types comprising MNM mines.

a. First-Time Sampling

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.12(a)(1) and (a)(2)(i), samples would be taken based on a representative fraction of the miners who are or may reasonably be expected to be exposed to respirable crystalline silica. First-time sampling occurs at the start of the 2024 Silica Final Rule's respective compliance date for coal mines and MNM mines. Second-time sampling occurs within 3 months of first-time sampling.

Under the 2024 Silica Final Rule's requirements in § 60.12(a)(2)(ii), if the additional sample is between the action level and the PEL, the mine operator would be required to take

another sampling within 3 months, transitioning into the above-action-level sampling as described in the 2024 Silica Final Rule's requirements in § 60.12(a)(3) and (4).

The assumptions used in calculating the number of first- and second-time samples can be found in the FRIA of the 2024 Silica Final Rule.

ii. Proposed Rule

Under proposed § 60.12(a)(2), mine operators would not be required to perform second-time sampling. MSHA, however, anticipates that all mines would perform first-time sampling to collect valuable data concerning respirable crystalline silica exposure rates in their mine. Under the proposed rule, mine operators would only need to sample the miners that are or may reasonably be expected to be exposed at or above the action level, instead of all miners expected to be exposed to any respirable crystalline silica. This decreases the number of miners the operator must sample.

In subsequent years only new mines would be performing first-time sampling. MSHA projects that about 2 percent of mines in any given year would be new entrants to the mining industry.

iii. Summary of Changes

Under the 2024 Silica Final Rule's requirements in § 60.12(a)(1) and (a)(2)(i), MSHA estimates the number of first- and second-time samples for the first 7 years in the top panel of Table VII-7. Under the proposed rule, the number of first-time samples would be halved because mine operators would no longer be required to conduct second-time sampling (bottom panel of Table VII-7).

Table VII-7. First-Time Sampling, 2024 Silica Final Rule and Proposed Rule

Type of Sample	Year 1	Year 2 [a]	Year 3 [a]	Year 4 [a]	Year 5 [a]	Year 6 [a]	Year 7 [a]
2024 Silica Final Rule – First- and Second-time Sampling							
Mines	12,631	253	253	253	253	253	253
Miners	284,779	5,696	5,696	5,696	5,696	5,696	5,696
Samples	154,084	3,082	3,082	3,082	3,082	3,082	3,082
Proposed Rule - First-time Sampling							

Mines	12,631	253	253	253	253	253	253
Miners	284,779	5,696	5,696	5,696	5,696	5,696	5,696
Samples	77,042	1,541	1,541	1,541	1,541	1,541	1,541

Notes: [a] MSHA assumes that 2 percent of mines are new and therefore undertake first-time sampling in years 2 – 60, but total number of mines remain constant.
[b] The calculations for first-time sampling are based on the number of mines. Because of sampling representativeness, in general the number of samples taken would be less than the number of miners.

b. Above-Action-Level Sampling

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.12(a)(2)(ii), if the sampling under this section is between the action level and the PEL, the mine operator is required to take another sampling within 3 months. This sampling can be discontinued when the two most recent sample results demonstrate exposure below the action level.

Although reducing exposures below the action level is costly for mine operators, repeated sampling is also costly. Mine operators have both a financial incentive and a human resource incentive to reduce exposures not just below the PEL but below the action level. From a human resource standpoint, reducing exposures below the action level would ensure that mine operators have a healthier miner population, thus reducing employee time-off and turnover. Reducing exposures below the action level would also ensure that mine operators can discontinue sampling if exposures consistently remain below the action level.

MSHA expects that the number of above-action-level samples would decline over time as mine operators come into compliance through engineering controls and administrative controls but would not entirely disappear. For the specific assumptions used in calculating the number of above-action-level samples taken each year, see the FRIA of the 2024 Silica Final Rule.

ii. Proposed Rule

Under proposed § 60.12(a)(3), if the sampling of any miner who may reasonably be expected to be exposed to respirable crystalline silica at or above the action level is between the action level and the PEL, the mine operator would be required to make approved respirators available before the start of the next work shift in accordance with § 60.14(b) and (c) until

sampling indicates exposures are below the action level. Mine operators would need only one sample result at or below the action level to stop sampling and to discontinue providing respirators to affected miners.

iii. Summary of Changes

The total number of above-action-level samples that would be taken under the 2024 Silica Final Rule and the proposed rule in the first 7 years of implementation is presented in Table VII-8.[34] MSHA assumes the number of above-action-level samples under the proposed rule would decrease substantially from the 2024 Silica Final Rule for two reasons. First, instead of sampling any miners who are or may reasonably be expected to be exposed to respirable crystalline silica at any level in the 2024 Silica Final Rule, only miners who are or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level would be sampled under the proposed rule. This proposed change would substantially reduce the number of miners being sampled as miners expected to be exposed below the action level are no longer required to be sampled. Second, mine operators do not need to take a sample if a miner's exposure is below the PEL. However, we expect that for some miners who are reasonably expected to be at or above the action level, mine operators will sample as frequently as necessary to ensure these miners are not exposed to RCS above the PEL. In contrast, the 2024 Silica Final Rule requires continued sampling until two consecutive sample results are below the action level.

Table VII-8. Above-Action-Level Sampling, 2024 Silica Final Rule and Proposed Rule

Type of Sample	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2024 Silica Final Rule – Above-action-level Sampling [a]							
Mines [b]	-	-	-	-	-	-	-
Miners	150,008	147,650	131,319	114,989	98,659	86,167	85,434
Samples [c]	47,506	88,176	79,062	69,948	60,834	51,720	44,885
Proposed Rule – Above-action-level Sampling [a]							
Mines [b]	-	-	-	-	-	-	-
Miners	84,031	75,866	67,701	59,536	51,371	43,206	42,717
Samples [c]	47,506	42,949	38,392	33,835	29,278	24,721	22,442

[34] All mine operators would be performing first-time sampling in first year, so they do not need to conduct above-action-level sampling in the Year 1.

Notes: [a] This includes above-action-level sampling between the action level and the PEL. Above-action-level sampling is expected to decline linearly from current exposure levels from Year 1 to Year 7, after which time the frequency of sampling at or above the action level would be constant.
[b] The calculations for above-action-level sampling are based on the number of miners. Because of sampling representativeness (see discussion in *FRIA Table 4-3*), in general the number of samples taken would be less than the number of miners.
[c] Above-action-level sampling occurs in the second half of Year 1 for MNM and coal mines.

(New) Making Respirators Available

Additionally, mine operators would be expected to make approved respirators available for miners if the sampling result is between the action level and the PEL. To estimate the cost of new respirators, MSHA assumed that mine operators would purchase tight-fitting, reuseable half-mask elastomeric respirators at a cost of $42.05 each plus $18.38 for filters.[35] In addition, MSHA assumed respirators would be assigned to individuals, not shared equipment. Furthermore, miners issued new respirators would require an additional 2 hours of labor time for fit testing and training, which is valued at the weighted average loaded wage rates of all mine workers in the given sector ($93.73 for Metal and Nonmetal miners and $106.30 for coal miners).[36, 37] The estimated total cost of a new respirator is presented in Table VII-9.

Table VII-9. Estimated Cost of New Respirators per Miner (in 2024 dollars)

Cost Components	Mine Sector	New Respirator Cost Per Miner	Fit Testing and Training	Annual Cost Per Entity-Standard Respirator Usage
-- Respirators cost $42.05 -- Respirator filters cost $18.38 -- 2 hours per miner for fit testing and training	MNM	$60.43	$93.73	$154.16
	Coal	$60.43	$106.30	$166.73

[35] Based on online (non-discount) prices: Websites for Northern Safety, 2022: $29.14/each for 3M Series 6500 half mask respirator, $10.25/pair for P100 pancake filters; and Grainger, 2022: $50.00 for MSA 420 series half mask respirator, $24.32 for P100 filter cartridges (package of 2). Prices are higher end of potential range, supplier bulk discounts available from numerous other sources.
[36] OSHA APF rulemaking (update to 29 CFR 1910.134) Unit Costs: 1 hour employee training, 1 hour employee qualitative fit testing. Alternatively, 2 hours for quantitative fit testing (from costs estimated in 2001-2006; may be reduced due to efficiency of more modern quantitative fit testing equipment currently available and widely used). MSHA assumed that worker fit testing is conducted in small groups; two to four miners are fit tested during the hour, but all remain part of the group for the full hour.
[37] MSHA assumed there will be no additional labor costs for personnel conducting fit testing or training because current respiratory protection programs already require these activities.

Using the exposure profile detailed in the FRIA of the 2024 Silica Final Rule, MSHA estimated that in Year 1 the number of miners exposed between the action level and the PEL to be 49,662 (39,770 MNM and 9,892 coal miners). Under the proposed rule, mine operators would need to make respirators available for these miners.[38] Since the number of above-action-level samples decreases across the first 6 years of the analysis (Table VII-8), it is assumed that the number of miners exposed between the action level and the PEL would also decrease. MSHA assumes the decreases would be linear with the number of MNM miners decreasing by 4,124 each year and coal miners decreasing by 352 between Year 1 and 6. In Years 7-60, the number of miners exposed between the action level and the PEL would drop to steady values of 18,788 MNM miners and 4,673 coal miners, matching the percentage reduction of samples that MSHA anticipates would fall in this range.

In Year 1, MSHA assumes that mine operators would purchase a new respirator for every eligible miner, resulting in 39,770 respirators for MNM miners and 9,892 for coal miners. MSHA assumes that respirators have a 5-year effective life, thus each year 80 percent of miners exposed between the action level and the PEL would already have working respirators. Mine operators would need to purchase replacement respirators for the remaining 20 percent of the exposed miners whose respirators have reached the end of their working life, MSHA's calculations anticipate this would begin in year 2 of the analysis. MSHA estimates that in Years 7-60 of the analysis, each year MNM mine operators would purchase 3,421 respirators and coal operators would purchase 1,591 respirators.

Table VII-10. Estimated Annual Number and Cost of Respirators (in 2024 dollars)

Mine Sector	Miners Between the Action Level and the PEL	Respirators Purchased	Total Annual Cost	Percent by Sector
Year 1				
Total	***49,662***	***49,662***	***$4,779,231***	***100.0%***
MNM	39,770	39,770	$3,727,781	78.0%

[38] MSHA is making the assumption that all miners exposed at or above the action level but at or below the PEL will need to have a respirator purchased for them in the first year. MSHA is making this assumption to ensure that the Agency does not underestimate the potential costs that would be incurred by operators while providing sufficient protection to affected miners.

Coal	9,892	9,892	$1,051,450	22.0%
Year 2				
Total	***45,185***	***9,038***	***$871,094***	***100.0%***
MNM	35,646	7,130	$668,298	76.7%
Coal	9,539	1,908	$202,797	23.3%
Year 3				
Total	***40,709***	***8,143***	***$786,342***	***100.0%***
MNM	31,522	6,306	$591,039	75.2%
Coal	9,187	1,837	$195,304	24.8%
Year 4				
Total	***36,233***	***7,248***	***$701,591***	***100.0%***
MNM	27,399	5,481	$513,780	73.2%
Coal	8,834	1,767	$187,810	26.8%
Year 5				
Total	***31,756***	***6,353***	***$616,839***	***100.0%***
MNM	23,275	4,657	$436,522	70.8%
Coal	8,482	1,696	$180,317	29.2%
Year 6				
Total	***27,280***	***5,459***	***$532,087***	***100.0%***
MNM	19,151	3,833	$359,263	67.5%
Coal	8,129	1,626	$172,824	32.5%
Years 7-60				
Total	***23,461***	***5,011***	***$489,711***	***100.0%***
MNM	18,788	3,421	$320,634	65.5%
Coal	4,673	1,591	$169,077	34.5%

c. Corrective Actions Sampling

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.13(b), mine operators are required to conduct sampling once corrective actions have been taken to lower the concentration of respirable crystalline silica to levels at or below the PEL. The mine operator is required to take additional or new corrective actions until sampling indicates miner exposures are at or below the PEL.

ii. Proposed Rule

The proposed rule would keep the requirement to conduct corrective actions sampling.

iii. Summary of Changes

The proposed rule would make no changes to the 2024 Silica Final Rule requirements concerning corrective actions sampling. MSHA assumes the number of corrective actions and corrective actions sampling would remain the same in this analysis.

Table VII-11. Corrective Actions Sampling, 2024 Silica Final Rule and Proposed Rule

Type of Sample	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2024 Silica Final Rule – Corrective Actions Sampling [a]							
Mines	-	-	-	-	-	-	-
Miners [b]	71,183	68,095	60,944	53,793	46,641	41,246	41,246
Samples	27,929	52,023	46,912	41,800	36,689	31,577	27,743
Proposed Rule – Corrective Actions Sampling [a]							
Mines	-	-	-	-	-	-	-
Miners [b]	71,183	68,095	60,944	53,793	46,641	41,246	41,246
Samples	27,929	52,023	46,912	41,800	36,689	31,577	27,743

Notes: [a] Corrective actions sampling is expected to decline from current exposure levels from Year 1 to Year 7, after which time the frequency of sampling would be constant.
[b] The calculations for corrective actions sampling are based on the number of miners. Because of sampling representativeness (see discussion in *FRIA Table 4-3*), in general the number of samples taken would be less than the number of miners.
[c] Corrective actions sampling occurs in the second half Year 1 for MNM and coal mines.

d. Periodic Evaluations and Post Evaluation Sampling

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.12(c), at least every 6 months after commencing sampling under § 60.12(a)(1) or whenever there is a change in: production; processes; installation or maintenance of engineering controls; installation or maintenance of equipment; administrative controls; or geological conditions; mine operators are required to evaluate whether the change may reasonably be expected to result in new or increased respirable crystalline silica exposures. Once the evaluation is completed, the mine operator is required to: (1) make a record of the evaluation, including the evaluated change, the impact on respirable crystalline silica exposure, and the date of the evaluation; and (2) post the record on the mine bulletin board and, if applicable, by electronic means, for the next 31 days.

Under the 2024 Silica Final Rule's requirements in § 60.12(d), if the mine operator determines as a result of the periodic evaluation that miners may be exposed to respirable crystalline silica at or above the action level, the mine operator is required to perform sampling to assess the full shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be at or above the action level.

ii. Proposed Rule

The proposed rule would remove the requirements to conduct periodic evaluations and post-evaluation sampling.

iii. Summary of Changes

Under the proposed rule, MSHA would remove the requirements for periodic evaluations and post-evaluation sampling. The proposed change to an "as frequently as necessary" sampling structure makes these requirements redundant. Under the "as frequently as necessary" sampling structure, mine operators would continually evaluate their mines for the same conditions, processes, or procedures that triggered a periodic evaluation under the 2024 Silica Final Rule, such as changes in production, installation and maintenance of engineering controls, installation and maintenance of equipment, administrative controls, or geological conditions.

e. (New) As-Needed Sampling

i. 2024 Silica Final Rule

There are no requirements concerning as-needed sampling in the 2024 Silica Final Rule.

ii. Proposed Rule

Under proposed § 60.12(a)(2), mine operators would conduct sampling as frequently as necessary to assess the full-shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.

The assumptions MSHA used for the frequency of this type of sampling are based on the number of quarters a mine is active in a year:

- 4 Quarters: once every 12 months.
- 3 Quarters: once every 18 months.
- 1 or 2 Quarters: once every 24 months.

iii. Summary of Changes

Although post evaluation sampling in the 2024 Silica Final Rule is no longer required, the proposed rule introduces as-needed sampling, which would require mine operators to sample

as frequently as necessary rather than sampling within three months as required in the 2024 Silica Final Rule. When sample results are between the action level and the PEL, miners would receive better protection when respirators are provided in combination with sampling "as frequently as necessary." Since as-needed sampling is not currently required, all changes would represent an increase in the number of samples and compliance costs. MSHA estimates that each year 6,988 as-needed samples would be taken (see *Table VII-12*).

Table VII-12. As-needed Sampling, 2024 Silica Final Rule and Proposed Rule

Type of Sample	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
2024 Silica Final Rule – As-needed Sampling [a]							
Mines [b]	-	-	-	-	-	-	-
Miners	-	-	-	-	-	-	-
Samples [c]	-	-	-	-	-	-	-
Proposed Rule – As-needed Sampling [a]							
Mines [b]	-	-	-	-	-	-	-
Miners	7,119	7,119	7,119	7,119	7,119	7,119	7,119
Samples [c]	6,988	6,988	6,988	6,988	6,988	6,988	6,988

Notes: [a] As-needed sampling is performed to assess if the exposure level is at or above the action level.
[b] The calculations for as-needed sampling are based on the number of miners. Because of sampling representativeness (see discussion below *FRIA Table 4-3*), in general the number of samples taken would be less than the number of miners.
[c] As-needed sampling occurs every year for MNM and coal mines.

f. Storage of Exposure Monitoring Records

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.12(g), for each sample, the mine operator is required to make a record of the sample date, the occupations sampled, and the concentrations of respirable crystalline silica and respirable dust and post the record and the laboratory report on the mine bulletin board and, if applicable, by electronic means, for the next 31 days, upon receipt.

ii. Proposed Rule

There would be no changes from the 2024 Silica Final Rule requirements concerning sampling records.

iii. Summary of Changes

Recordkeeping costs for samples are already included in total sampling costs as discussed in Table VII-5. Therefore, under the proposed rule, there would be no change to the costs concerning the storage of exposure monitoring records.

g. Total Annualized Monitoring Costs

i. 2024 Silica Final Rule

Table VII-13 presents estimated total annualized costs of exposure monitoring by type of exposure monitoring and mining sector under standards set by the 2024 Silica Final Rule.

Table VII-13. Total Annualized Exposure Monitoring Costs by Mine Sector, 2024 Silica Final Rule (in millions of 2024 dollars)

Cost Type	Total Cost over 60 Years	Annualized Costs			Percent Annualized Costs [a]
		0 Percent Discount Rate	3 Percent Discount Rate	7 Percent Discount Rate	
All Mines					
First- and second-time sampling	$182.5	$3.0	$4.6	$7.1	10.9%
Above-action-level - sampling	$1,527.9	$25.5	$26.7	$28.6	43.7%
Above-action-level - respirators	-	-	-	-	-
Corrective actions sampling	$970.6	$16.2	$16.9	$17.9	27.4%
Process change evaluations	$242.9	$4.0	$4.0	$4.0	6.2%
Post evaluation sampling	$459.8	$7.7	$7.7	$7.7	11.7%
As-needed sampling	-	-	-	-	-
Total	***$3,383.7***	***$56.4***	***$59.8***	***$65.4***	***100.0%***
MNM					
First- and second-time sampling	$162.4	$2.7	$4.1	$6.4	9.7%
Above-action-level - sampling	$1,367.0	$22.8	$24.0	$25.9	39.6%
Above-action-level - respirators	-	-	-	-	-
Corrective actions sampling	$904.1	$15.1	$15.8	$16.8	25.8%
Process change evaluations	$217.6	$3.6	$3.6	$3.6	5.5%
Post evaluation sampling	$383.6	$6.4	$6.4	$6.4	9.8%
As-needed sampling	-	-	-	-	-
MNM Subtotal	***$3,034.6***	***$50.6***	***$53.9***	***$59.1***	***90.4%***
Coal					
First- and second-time sampling	$20.0	$0.3	$0.5	$0.8	1.2%
Above-action-level - sampling	$160.9	$2.7	$2.7	$2.7	4.1%
Above-action-level - respirators	-	-	-	-	-
Corrective actions sampling	$66.5	$1.1	$1.1	$1.1	1.7%
Process change evaluations	$25.4	$0.4	$0.4	$0.4	0.6%
Post evaluation sampling	$76.2	$1.3	$1.3	$1.3	1.9%
As-needed sampling	-	-	-	-	-
Coal Subtotal	***$349.1***	***$5.8***	***$6.0***	***$6.3***	***9.6%***

Note: [a] At the 7 percent discount rate.

ii. Proposed Rule

Table VII-14 presents estimated total annualized costs of exposure monitoring by type of exposure monitoring and mining sector under the proposed rule. The different types of sampling are projected to cost mine operators an average of about $40.5 million (at a 7 percent discount rate) per year over 60 years. Of the total exposure monitoring costs, about 91 percent of these costs are expected to be incurred by MNM mines and the remaining 9 percent by coal mines. When broken down by type of sampling: first-time sampling ($3.6 million annualized cost) would comprise about 8.8 percent of monitoring costs; above-action-level sampling ($15.0 million) would account for about 37.1 percent; above-action-level respirator purchase and maintenance ($0.8 million) would account for about 2.1 percent; corrective actions sampling ($17.9 million) would account for 44.3 percent; and as-needed sampling ($3.1 million) would account for 7.8 percent. Periodic evaluations and post-evaluation sampling would no longer occur.

Table VII-14. Total Annualized Exposure Monitoring Costs by Mine Sector, Proposed Rule (in millions of 2024 dollars)

Cost Type	Total Cost over 60 Years	Annualized Costs			Percent Annualized Costs [a]
		0% Real Discount Rate	3% Real Discount Rate	7% Real Discount Rate	
All Mines					
First- and second-time sampling	$91.2	$1.5	$2.3	$3.6	8.8%
Above-action-level sampling	$774.0	$12.9	$13.7	$15.0	37.1%
Above-action-level respirators	$34.7	$0.6	$0.7	$0.8	2.1%
Corrective actions sampling	$970.6	$16.2	$16.9	$17.9	44.3%
Post-evaluation sampling	$0.0	$0.0	$0.0	$0.0	0.0%
Process change evaluations	$0.0	$0.0	$0.0	$0.0	0.0%
As-needed sampling	$188.6	$3.1	$3.1	$3.1	7.8%
Total	***$2,059.2***	***$34.3***	***$36.7***	***$40.5***	***100.0%***
MNM					
First- and second-time sampling	$81.2	$1.4	$2.0	$3.2	7.8%
Above-action-level sampling	$692.8	$11.5	$12.3	$13.6	33.6%
Above-action-level respirators	$23.6	$0.4	$0.5	$0.6	1.5%
Corrective actions sampling	$904.1	$15.1	$15.8	$16.8	41.6%
Post-evaluation sampling	$0.0	$0.0	$0.0	$0.0	0.0%
Process change evaluations	$0.0	$0.0	$0.0	$0.0	0.0%
As-needed sampling	$157.1	$2.6	$2.6	$2.6	6.5%

MNM Subtotal	***$1,858.8***	***$31.0***	***$33.2***	***$36.9***	***91.0%***
Coal					
First- and second-time sampling	$10.0	$0.2	$0.2	$0.4	1.0%
Above-action-level sampling	$81.2	$1.4	$1.4	$1.4	3.5%
Above-action-level respirators	$11.1	$0.2	$0.2	$0.2	0.6%
Corrective actions sampling	$66.5	$1.1	$1.1	$1.1	2.7%
Post-evaluation sampling	$0.0	$0.0	$0.0	$0.0	0.0%
Process change evaluations	$0.0	$0.0	$0.0	$0.0	0.0%
As-needed sampling	$31.5	$0.5	$0.5	$0.5	1.3%
Coal Subtotal	***$200.4***	***$3.3***	***$3.5***	***$3.6***	***9.0%***

Note: [a] At the 7 percent discount rate.

2. Exposure Control (§ 60.11)

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.11, mine operators are required to install, use, and maintain feasible engineering controls, supplemented by administrative controls when necessary, to keep each miner's exposure at or below the PEL.

To estimate the cost of control measures, MSHA estimated three categories of exposure controls:

- Installation costs: consisting of the costs of purchasing new engineering control equipment and installing them or purchasing new services to clean or ventilate dust from work areas.
- Maintenance and repair costs: to ensure proper use of existing engineering controls with increased frequency of dust control maintenance and repair.
- Costs of administrative controls to reduce dust exposure: the costs of training or posting signage regarding new policies.

ii. Proposed Rule

MSHA proposes to amend the 2024 Silica Final Rule's requirements in § 60.11(b) to clarify that mine operators would be prohibited from using rotation of miners as a corrective action when miners' exposures are above the PEL.

iii. Summary of Changes

This proposed change is consistent with the protections for miner safety and health in the 2024 Silica Final Rule standards and only clarifies MSHA requirements in the Agency's standards. Amending this provision would not change compliance costs concerning exposure control.

3. Respiratory Protection (§ 60.14)

i. 2024 Silica Final Rule

The requirements for the use of respiratory protection at MNM mines are presented in the 2024 Silica Final Rule's requirements in § 60.14(a). If sample results indicate miners' exposure exceeds the PEL, mine operators are required to use respiratory protection as a temporary measure when miners must work in concentrations of respirable crystalline silica above the PEL while engineering control measures are being developed and implemented or it is necessary by the nature of work involved.

ii. Proposed Rule

MSHA proposes to amend the 2024 Silica Final Rule's requirements in § 60.14(a) to clarify the use of respirators at MNM mines. Miners are allowed to work for reasonable periods of time using respiratory protection when they must work in an environment when silica concentrations are above the PEL.

iii. Summary of Changes

This proposed change clarifies that mine operators may allow miners to use respiratory protection for reasonable periods of time, instead of as a temporary measure. Amending provisions in the 2024 Silica Final Rule would not change compliance costs concerning the number of affected miners or required respirators when miners are exposed above the PEL, and the change would not result in any reduction in safety for miners.

The additional costs for respirator use identified in proposed § 60.12(a)(3) are discussed above in above-action-level sampling.

4. Medical Surveillance (§ 60.15)

i. 2024 Silica Final Rule

In the 2024 Silica Final Rule, § 60.15 requires MNM mine operators to provide mandatory medical examinations to new miners within 60 days of beginning employment with limited exceptions, and at multiple other intervals. It also requires MNM mine operators to provide voluntary medical examinations to all miners during an initial 12-month period and every 5 years.

ii. Proposed Rule

The proposed rule would require MNM mine operators to provide voluntary medical examinations to new miners within 60 days of beginning employment and at multiple other intervals. MSHA also proposes language that would require MNM mine operators to provide all miners the opportunity for voluntary medical examinations at least every 5 years. Additionally, MSHA proposes that all mine operators (coal and MNM) would be required to provide mandatory medical examinations to sampled miners who are exposed above the PEL based on an MSHA sample, within 60 days of the sample results, except for miners that have received a medical examination within the last 2 years.

The proposed rule changes mandatory medical surveillance to voluntary medical surveillance for new MNM miners and extends the initial time to provide medical examinations under voluntary medical surveillance from 1 year to 5 years. This is not expected to reduce miners' access to medical examinations as operators are still required to provide examinations on a voluntary basis.

The proposed rule adds a new requirement for both MNM and coal mine operators to provide mandatory medical examinations to sampled miners with exposures above the PEL, except for miners who have received a medical examination within the last two years. The proposal requires MNM and coal mine operators to provide medical examinations to sampled miners with overexposures within 60 days of the operator's receipt of the sample results to allow for early detection and help allocate limited medical resources to the most at-risk miners.

In this section, MSHA considers the cost to mine operators for providing medical examinations to MNM and coal miners under the proposed requirements in § 60.15. These examinations include both voluntary and mandatory examinations for MNM miners and mandatory examinations for coal miners. Specifically, MSHA estimates the following medical examinations:

- MNM mine operators would provide voluntary medical examinations for new miners who begin work in the mining industry for the first time, including initial, 3-year follow-up, and 2-year follow-up examinations;
- MNM mine operators would provide voluntary 5-year examinations for both new and current miners;
- MNM mine operators would provide mandatory examinations if an MSHA sample shows that the miner is exposed above the PEL; and
- Coal mine operators would provide mandatory examinations if an MSHA sample shows that the miner is exposed above the PEL.

To estimate the compliance costs to mine operators, MSHA estimates the cost of a medical examination, and the number of medical examinations miners would receive.

a. Costs of A Medical Examination

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.15(a), MNM mine operators are required to provide each miner with periodic medical examinations at no cost to the miner. The medical examinations must include the following information: medical and work history, physical examination, chest X-ray, and pulmonary function test. Mine operators are also required to obtain a written medical opinion from the PLHCP or specialist within 30 days of the medical examination that contains any recommended limitations on the miner's use of respirators.

ii. Proposed Rule

Under proposed § 60.15(a), each mine operator would be required to provide to each miner periodic medical examinations at no cost to the miner and at specified frequencies. The medical examinations would need to include the following information: a medical and work history; a physical examination; a chest X-ray; and a pulmonary function test, administered by a spirometry technician. Mine operators would also be required to obtain a written confirmation of the medical examination from the PLHCP or specialist within 30 days of the medical examination.

MSHA assumes that a medical examination has the following cost elements: chest X-ray, spirometry test, symptom assessment and occupational history, the physical examination, lost work time while being examined, lost travel time, transportation cost, and recordkeeping of the mine operator.

MSHA calculates the unit cost of an examination using the same method as OSHA's Final Economic Analysis (FEA) of medical surveillance associated with the OSHA Silica Rule (OSHA, 2016).[39] In its silica rule FEA, OSHA first presented cost estimates in 2009 dollars, then converted to 2012 dollars using the Consumer Price Index (CPI) for Medical Care in US. MSHA has used the same CPI series for Medical Care to further inflate costs associated with medical services (chest X-ray, spirometry, symptom assessment and occupational history, and physical examination) to 2024 dollars (Bureau of Labor Statistics, 2025).[40] MSHA additionally estimates the labor cost of examinations for mine operators (lost work time while being examined, lost travel time, transportation cost, and recordkeeping) using MNM and coal miner average wages. MSHA uses data from the May 2021 Occupational Employment and Wage Statistics (OEWS)

[39] https://www.federalregister.gov/d/2016-17270, last accessed on 1/29/2026.
[40] The cost of medical examinations are inflated using Bureau of Labor Statistics (BLS) CPI for All Urban Consumers: Medical Care in U.S. City Average, all urban consumers, not seasonally adjusted, Series ID CUUR0000SAM. Available at: https://data.bls.gov/cgi-bin/srgate, last accessed on 12/18/2025.

for miner wage rates and inflates wages to 2024 dollars for this PRIA analysis using the U.S. GDP Price Deflator.[41]

Table VII-15 shows estimated cost components in 2024 dollars, which sum to a unit cost of $700.51 per examination for MNM miners and $730.35 for coal miners. The cost of a medical examination would be the same for either a voluntary or a mandatory examination.

Table VII-15. Estimated Cost Per Medical Examination (in 2024 dollars)

Cost Components	MNM Exam Cost	Coal Exam Cost
Chest X-Ray	$136.08	$136.08
Spirometry	$93.48	$93.48
Symptom Assessment and Occupational History	$56.97	$56.97
Physical Examination	$181.17	$181.17
Lost Work Time While Being Examined	$92.84	$106.30
Lost Travel Time	$92.84	$106.30
Transportation Cost	$28.46	$28.46
Recordkeeping of Mine Operator	$18.66	$21.58
Total	***$700.51***	***$730.35***

b. Voluntary Medical Examinations for MNM Miners

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule's requirements in § 60.15(b), MNM mine operators are required to provide mandatory medical examinations to new miners within 60 days of beginning employment with limited exceptions and at multiple other time intervals. These initial medical examinations are mandatory for miners joining the mining industry. MNM operators are also required to provide voluntary medical examinations to all miners during an initial 12-month period and then once every 5 years.

ii. Proposed Rule

Under proposed § 60.15(b), each MNM mine operator would provide the opportunity to all miners employed at the mine to take the medical examinations at specified frequencies. These

[41] This hourly rate was derived from the OEWS May 2021 survey for both MNM and coal miner wages. OEWS May 2021 reports wages in 2021 dollars. MSHA uses the OEWS May 2021 survey to be consistent with the 2024 Silica Final Rule. Bureau of Labor Statistics: Occupational Employment and Wage Statistics (OEWS). National industry-specific and by ownership. Downloaded from https://www.bls.gov/oes/tables.htm on April 29, 2022.

examinations would be provided to new miners within 60 days of beginning employment and at multiple other time intervals (including 3-year follow-up, 2-year follow-up, and 5-year examinations). These examinations would be provided to all miners at least every 5 years. Miners could take voluntary medical examinations if they choose to, but MNM mine operators would be required to offer them to eligible miners.

There is no readily available data on MNM miners' participation rate. For purposes of this analysis, MSHA estimates compliance costs for voluntary examinations using two participation rates to determine the proportion of eligible MNM miners who would choose to take a voluntary examination: low 25% and high 75%. At a 25 percent participation rate, 25 percent of eligible miners would choose to take the voluntary examinations offered by mine operators. MSHA presents the cost estimations for each participation rate in Table VII-30. For illustrative purposes, MSHA presents the calculation using a 25 percent participation rate in the first 11 years of the purposed rule's implementation, while the full analysis period is 60 years. Results from a 75 percent participation rate are reported in Table VII-30.

ii-1. Voluntary Examinations for MNM Miners During the First 5 Years of Employment

Initial Examinations

Under proposed § 60.15(b)(3)(i), MNM mine operators would be required to provide the opportunity for an initial voluntary medical examination no later than 60 days after beginning employment for each miner who begins work in the mining industry for the first time.

MSHA assumes the total number of MNM miners would remain constant at 184,615 over the analysis period. MSHA estimates that the average tenure (number of years on the job) of an MNM miner (before leaving the mining industry) is 22 years, which is derived from a 2012 survey conducted by NIOSH.[42] Assuming an average miner staying employed for 22 years in

[42] The 2012 report by NIOSH, entitled, "National Survey of the Mining Population: Part 1: Employees," (https://www.cdc.gov/niosh/mining/works/coversheet776.html) includes the findings of its 2008 survey on mine operators and miners in the U.S. (Details on the survey methodology and results are available in the link.) The NIOSH survey found the following mine experiences for different types of MNM mines, which average to about 11 years (11.375 to be precise): metal mines, 10.7 years; nonmetal, 12.0 years; stone, 12.5 years, and sand and gravel

mining, MSHA estimated that 1/22 of all MNM miners (8,392 miners) would leave and be replaced by the same number of new miners joining the industry each year. MSHA assumes that each of the 8,392 new miners are eligible for an initial medical examination within 60 days of employment. Under the assumption of a 25 percent participation rate, MSHA calculates that 2,098 miners would opt to take the initial examination each year.

3-Year Follow-up Examinations

Under proposed § 60.15(b)(3)(ii), each MNM mine operator would be required to offer a voluntary follow-up examination no later than 3 years after the initial examination for new MNM miners. Only miners who choose to take the initial examination are eligible for the voluntary 3-year follow-up examination. Among the 2,098 miners who choose to take the initial examination and thus are eligible for the 3-year follow-up examination, 525 miners would elect to participate in the 3-year follow-up examination each year assuming a 25 percent participation rate. MSHA assumes that the voluntary 3-year follow-up examination would apply to all eligible new MNM miners each year, starting at Year 4 of the rule's implementation.

2-Year Follow-up Examinations for High-Risk Miners

Under proposed § 60.15(b)(3)(iii), MNM mine operators would provide the miner with a voluntary follow-up medical examination conducted by a specialist no later than 2 years after the 3-year follow-up examination if a miner's chest X-ray at the voluntary 3-year follow-up examination shows evidence of pneumoconiosis or the spirometry examination indicates evidence of decreased lung function (these miners are hereby identified as high-risk).

In this analysis, MSHA does not have information to accurately measure the percentage of MNM miners who would be offered another follow-up exam 2 years after the initial 3-year follow-up exam. MSHA assumes that only a small fraction of MNM miners, 5 percent of the 525

10.3 years. For comparison, the same survey found the average mining experience for coal miners was 16.0 years. These averages reflected the average number of years that respondent miners had worked at mines at the time the survey was conducted. MSHA considered these average mine experiences to represent approximately one half of the mining tenure these miners would have (the years in mining when they leave). Conversely, MSHA estimated miners' total expected tenure to be twice these average mining experiences.

miners who participate in the 3-year examinations (26 miners), would be high-risk and show evidence of pneumoconiosis. MSHA further assumes that at a 90 percent participation rate, 24 out of the 26 high-risk miners would choose to take the 2-year follow-up examination each year, starting at Year 6 after the proposed rule is implemented.

Table VII-16 summarizes the total number of estimated voluntary medical examinations from voluntary initial, 3-year follow-up, and 2-year follow-up examinations for new miners in the first 11 years after the rule's implementation.

Table VII-16. Voluntary Initial, 3-Year Follow-up, and 2-Year Follow-up Examinations for New Miners Within 5 Years of Joining MNM Mines (25 Percent Participation Rate)

Year	New MNM Miners	Initial Exams	3-Year Follow-up Exams	High-Risk Miners after 3-Year Follow-up Exams	2-Year Follow-up Exams for High-Risk Miners	Total Exams of New Miners Within 5 Years of Joining
	(A)	(B)=(A)x25%	(C)=(B)x25%	(D)=(C)x5%	(E)=(D)x90%	(B)+(C)+(E)
1	8,392	2,098	0	0	0	2,098
2	8,392	2,098	0	0	0	2,098
3	8,392	2,098	0	0	0	2,098
4	8,392	2,098	525	26	0	2,623
5	8,392	2,098	525	26	0	2,623
6	8,392	2,098	525	26	24	2,646
7	8,392	2,098	525	26	24	2,646
8	8,392	2,098	525	26	24	2,646
9	8,392	2,098	525	26	24	2,646
10	8,392	2,098	525	26	24	2,646
11	8,392	2,098	525	26	24	2,646

Notes: The numbers of miners and examinations are rounded. Follow-up examinations do not start until Year 4, for 3-year follow-up examinations, and Year 6, for 2-year follow-up examinations, as miners would need to have an initial examination before being eligible.

ii-2. Voluntary 5-Year Medical Examinations for All MNM Miners

Under proposed § 60.15(b)(1) and (b)(2), each MNM mine operator would provide voluntary medical examinations during an initial 5-year period and at least every 5 years after the end of the initial period. The medical examinations would be available during a 6-month period that begins no less than 3.5 years and not more than 4.5 years from the end of the last 6-month period. MSHA assumes these examinations would be offered by MNM mine operators at a fixed schedule, starting at Year 1 and offered every 5 years afterwards.

Current MNM Miners

MSHA assumes that all current MNM miners who already work in the mining industry prior to the implementation of the proposed rule would be offered the voluntary 5-year examination at a 5-year interval, starting in Year 1.

MSHA estimates that in Year 1, 176,223 current MNM miners working in mining would be eligible for the 5-year voluntary examination. The number of eligible current miners declines steadily over time due to current miners leaving the mining industry. Each year, MSHA estimates that 1/22 of all MNM miners (8,392 miners) would exit the industry.

In Year 1, 176,223 current MNM miners would be offered the 5-year medical examination. At a 25 percent participation rate, 44,056 current miners would choose to take the examination.

Five years later, in Year 6, the cohort of 176,233 current miners decreases to 134,263 miners due to worker turnover (losing 8,392 miners every year). Assuming a 25 percent participation rate, MSHA estimates that 33,566 current MNM miners would choose to receive voluntary 5-year examinations. Similarly, 23,076 current MNM miners would participate in the voluntary 5-year examinations in Year 11.

Table VII-17. Voluntary 5-Year Examinations for Current MNM Miners (25 Percent Participation Rate)

Year	5-Year Exams Offered	Current MNM Miners	5-Year Exams of Current Miners
	(A)	(B)	(B)x25%
1	Yes	176,223	44,056
2	No	167,831	0
3	No	159,439	0
4	No	151,047	0
5	No	142,655	0
6	Yes	134,263	33,566
7	No	125,871	0
8	No	117,479	0
9	No	109,087	0
10	No	100,695	0
11	Yes	92,303	23,076

Note: The numbers of examinations are rounded.

New MNM Miners

Under proposed § 60.15(b)(3), mine operators would be required to provide subsequent initial, 3-year follow-up, and 2-year follow-up (if identified as high-risk) examinations to new miners after they first join the mining industry. In this PRIA, MSHA assumes a miner would not receive more than one medical examination a year due to the level of effort and limited value in redundant examinations. If a miner is already offered one of these examinations under § 60.15(b)(3), they would not be offered a 5-year examination if both are scheduled to occur in the same year. MSHA assumes that new MNM miners who first join the mining industry would be offered a voluntary 5-year examination at a 5-year interval, starting at Year 6.

In Year 6 when eligible new miners would first be offered voluntary 5-year examinations, some miners would be excluded from the 5-year examinations if the miner is offered other voluntary medical examinations: initial, 3-year follow-up, and 2-year follow-up (if identified as high-risk) examinations, depending on the new miner's tenure.

For miners joining the industry in Year 1, 8,392 new MNM miners would be offered initial examinations within 60 days of employment. At a participation rate of 25 percent, a total of 2,098 new MNM miners would elect to participate in the initial examinations in the same year. Among the 2,098 miners, 525 miners would choose to take the 3-year follow-up examinations in Year 4, assuming a participation rate of 25 percent. A small portion, 26 of those miners, would be identified as high-risk and would be provided with the opportunity for the 2-year follow-up examinations in Year 6. These 26 high-risk new miners would not be offered the 5-year voluntary medical examinations provided by mine operators in Year 6.

Similarly for miners starting in Year 3, 8,392 new MNM miners joining the mining industry would be provided with voluntary initial examinations and 2,098 miners would choose to participate. These 2,098 miners would be offered a 3-year follow up examination in Year 6. The same schedule would apply for new MNM miners joining in other years.

In Year 6, a total of 50,352 new MNM miners would be eligible for the voluntary 5-year examinations (8,392 new miners per year through Year 1 through Year 6). Miners would not be

offered the 5-year examinations if the miner is offered any of the other voluntary medical examinations: initial, 3-year follow-up, or 2-year follow-up (if identified as high-risk) examinations. There would be 10,516 new miners not offered the 5-year voluntary medical examinations in Year 6: 26 high-risk miners, who join the mining industry in Year 1, would be eligible for the 2-year follow-up examinations; 2,098 miners who join the industry in Year 3 would be eligible for the 3-year follow-up examinations; and 8,392 miners who join in Year 6 would be eligible for the initial examinations.

After accounting for the new miners who would be offered the voluntary initial, 3-year follow-up, or 2-year follow-up examinations in Year 6, MNM mine operators would be required to offer voluntary 5-year examinations to 39,836 new miners. Assuming a 25 percent participation rate, 9,959 new miners would be expected to take the voluntary 5-year examinations in Year 6.

Similar calculations apply to the subsequent years at a 5-year interval: Year 11, Year 16, etc.

Table VII-18. Voluntary 5-Year Examinations for New MNM Miners after 5 Years of Joining MNM Mines (25 Percent Participation Rate)

Year	5-Year Exams Offered	New Miners Offered for 5-Year Exams	New Miners Offered Exams Earlier			New Miners Eligible for 5-Year Exams	5-Year Exams of New Miners
			Initial Exams	3-Year Follow-up Exams	2-Year Follow-up Exams for High-Risk Miners		
	(A)	(B)	(C)	(D)	(E)	(F)=(B)-(C)-(D)-(E)	(F)x25%
1	Yes	0	8,392	0	0	0	0
2	No	0	8,392	0	0	0	0
3	No	0	8,392	0	0	0	0
4	No	0	8,392	2,098	0	0	0
5	No	0	8,392	2,098	0	0	0
6	Yes	50,352	8,392	2,098	26	39,836	9,959
7	No	0	8,392	2,098	26	0	0
8	No	0	8,392	2,098	26	0	0
9	No	0	8,392	2,098	26	0	0
10	No	0	8,392	2,098	26	0	0
11	Yes	92,312	8,392	2,098	26	81,769	20,449

Note: The numbers of examinations are rounded.

The table below presents total numbers of voluntary examinations for new MNM miners, including initial, 3-year follow-up, and 2-year follow-up (if identified as high-risk) examinations, as well as voluntary 5-year examinations for both current and new MNM miners.

Table VII-19. Total Number of Voluntary Examinations for New and Current MNM Miners (25 Percent Participation Rate)

Year	New Miner Initial Exams	New Miner 3-Year Follow-up Exams	New Miner 2-Year Follow-up Exams for High-Risk Miners	Current Miners 5-Year Exams	New Miners 5-Year Exams	Total Voluntary Exams of MNM Miners
	(A)	(B)	(C)	(D)	(E)	(A)+(B)+(C)+(D)+(E)
1	2,098	0	0	44,056	0	46,154
2	2,098	0	0	0	0	2,098
3	2,098	0	0	0	0	2,098
4	2,098	525	0	0	0	2,623
5	2,098	525	0	0	0	2,623
6	2,098	525	24	33,566	9,959	46,171
7	2,098	525	24	0	0	2,646
8	2,098	525	24	0	0	2,646
9	2,098	525	24	0	0	2,646
10	2,098	525	24	0	0	2,646
11	2,098	525	24	23,076	20,449	46,171

Note: The numbers of examinations are rounded.

c. Mandatory Medical Examinations for Exposed MNM and Coal Miners

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule standards, there is no requirement for mine operators to provide medical examinations to miners who have been exposed above the PEL.

ii. Proposed Rule

Under proposed § 60.15(c), both MNM and coal mine operators would be required to provide mandatory medical examinations to miners who are exposed above the PEL based upon an MSHA sample within 60 days of the operator's receipt of the sample results. However, a miner who has been exposed above the PEL, based upon an MSHA sample, would not be provided with a mandatory medical examination if the miner has taken a medical examination within the last two years. The examination taken within the last two years include voluntary

examinations offered in proposed § 60.15(b) or mandatory examinations required in proposed § 60.15(c), or in accordance with § 72.100.

Miners who would choose to take voluntary examinations within the last two years would not be provided with a mandatory examination even when they would be found to be exposed above the PEL. For illustrative purposes, MSHA presents the calculation of mandatory examinations in the first 11 years of the proposed rule's implementation, excluding any voluntary examinations (under a 25 percent participation rate) and mandatory examinations in the last two years. This participation rate affects how many miners would be excluded from the requirement to take mandatory medical examinations.

ii-1. Mandatory Medical Examinations for Exposed MNM Miners

Number of Sampled Exposed MNM Miners

Under proposed § 60.15(c), sampled miners would be required to get mandatory medical examinations if an MSHA sample indicates an exposure above the PEL. In this analysis, MSHA uses the samples presented in the FRIA Table 2-5 from the 2024 Silica Final Rule to estimate the number of MNM miners sampled each year by MSHA. Between 2005-2019, MSHA inspectors conducted 57,769 samples at MNM mines, averaging 3,851 samples per year.

To calculate the number of samples that would be above the PEL, MSHA uses the exposure rate in Table VII-6, derived from the Agency's compliance sampling data, to estimate the number of exposed MNM miners each year. Because no available data indicate the yearly rate at which mine operators would reduce miner exposures to levels below the action level, MSHA assumed the share of exposed MNM miners would decline linearly from Year 1 to Year 7 until reaching a steady value in Year 7 and subsequent years.

Table VII-20. Exposed MNM Miners Based on MSHA Samples

Year	MNM Miners Sampled	Projected Exposed MNM Miners	Exposed MNM Miners Sampled by MSHA
	(A)	(B)	(C)=(A)x(B)
1	3,851	18.0%	692
2	3,851	16.3%	628

3	3,851	14.7%	564
4	3,851	13.0%	500
5	3,851	11.3%	436
6	3,851	9.7%	372
7	3,851	8.0%	308
8	3,851	8.0%	308
9	3,851	8.0%	308
10	3,851	8.0%	308
11	3,851	8.0%	308

Note: The number of exposed MNM miners sampled by MSHA in column (C) is rounded.

Voluntary Examinations within the Last Two Years for MNM Miners

Not all exposed MNM miners would be required to take mandatory medical examinations, as some exposed miners may have taken voluntary or mandatory medical examinations within the last two years. For this analysis, MSHA considers a miner excluded for the mandatory examination if the miner has received an examination (regardless of whether the examination was voluntary or mandatory) during the two previous years or in current year. For example, if a miner would be found to be exposed to levels above the PEL in Year 3, the miner would not be able to take a mandatory examination if the miner already received an examination in two previous years (Year 1 or Year 2) or in the current year (Year 3).

Table VII-21 below presents the number of total MNM miners, voluntary examinations (including initial, 3-year follow-up, 2-year follow-up (if identified as high-risk), and 5-year examinations), and total number of voluntary examinations received within the last two years.

Table VII-21. Voluntary Medical Examinations for MNM Miners Within the Last Two Years (25 Percent Participation Rate)

Year	Total MNM Miners	MNM Voluntary Exams in that Year	MNM Voluntary Exams in Prior Year	MNM Voluntary Exams 2 Years Ago	Total Voluntary Exams for MNM Miners Within the Last 2 Years
	(A)	(B)	(C)	(D)	(E)=(B)+(C)+(D)
1	184,615	46,154	0	0	46,154
2	184,615	2,098	46,154	0	48,252
3	184,615	2,098	2,098	46,154	50,350
4	184,615	2,623	2,098	2,098	6,819
5	184,615	2,623	2,623	2,098	7,343
6	184,615	46,171	2,623	2,623	51,416
7	184,615	2,646	46,171	2,623	51,439
8	184,615	2,646	2,646	46,171	51,463

9	184,615	2,646	2,646	2,646	7,938
10	184,615	2,646	2,646	2,646	7,938
11	184,615	46,171	2,646	2,646	51,463

Notes: The numbers of examinations (including contractor miners) are rounded.

Mandatory Examinations for MNM Miners

All exposed miners would be required to take mandatory medical examinations if identified by MSHA samples unless they already take voluntary or mandatory examinations within the last two years and thus would be excluded from mandatory examinations. To calculate the number of mandatory examinations of exposed miners, MSHA first estimates the share of miners taking examinations within the last two years, including both voluntary and mandatory examinations.

In Year 1, 46,154 voluntary examinations and no mandatory examinations would be taken for 184,615 MNM miners. As a result, about 25 percent of MNM miners would take examinations in Year 1. MSHA applies the same ratio for mandatory examinations among exposed miners and estimates that for the 692 exposed miners in Year 1, 25 percent would have taken examinations and would be excluded from taking mandatory medical examinations. The remaining 75 percent (519 miners) would be required to take mandatory examinations.

In Year 2, 48,252 voluntary examinations would be taken within the last 2 years (in Year 1 and 2) and 519 mandatory examinations in Year 1, which implies that 26 percent of MNM miners would take either voluntary or mandatory medical examinations in Year 1 or Year 2. For the 628 exposed MNM miners, 74 percent (462 miners) would be required to take mandatory examinations after excluding the miners who receive examinations within the last two years.

Similarly, in Year 3, 50,350 voluntary examinations would be taken within the last 2 years (in Year 1, 2 and 3), and 981 mandatory examinations would be taken in Year 1 and Year 2. In total, 28 percent of miners would have received voluntary or mandatory medical examinations within the last 2 years. Of the 564 exposed miners, 407 miners would be required to take mandatory medical examinations in Year 3.

Table VII-22. Mandatory Examinations for Exposed MNM Miners (25 Percent Participation Rate)

Year	MNM Miners	Miners Receiving Exams Within the Last 2 Years			Percent of Miners Examined Within the Last 2 Years	Exposed MNM Miners	Mandatory Exams of Exposed MNM Miners
		Miners Receiving Voluntary Exams within the Last 2 Years	Exposed Miners Examined Last Year	Exposed Miners Examined 2 Years Ago			
	(A)	(B)	(C)	(D)	(E)=((B)+(C)+(D))/(A)	(F)	(G)=(F)x(1-(E))
1	184,615	46,154	0	0	25%	692	519
2	184,615	48,252	519	0	26%	628	462
3	184,615	50,350	462	519	28%	564	407
4	184,615	6,819	407	462	4%	500	479
5	184,615	7,343	479	407	4%	436	417
6	184,615	51,416	417	479	28%	372	267
7	184,615	51,439	267	417	28%	308	221
8	184,615	51,463	221	267	28%	308	221
9	184,615	7,938	221	221	5%	308	294
10	184,615	7,938	294	221	5%	308	294
11	184,615	51,463	294	294	28%	308	221

Note: The numbers of miners and examinations are rounded.

ii-2. Coal Mandatory Exposed Miner Examinations

In 2019, there were 1,106 active coal mines and 72,768 coal miners. MSHA uses the samples presented in the FRIA Table 2-6 from the 2024 Silica Final Rule to estimate the number of coal miners sampled each year by MSHA. Between 2016-2021, MSHA inspectors conducted 63,127 samples at coal mines, averaging 10,521 samples per year.

To calculate the number of samples that would be above the PEL, MSHA uses the exposure rate in Table VII-6, reported in the 2024 Silica Final Rule, to estimate the number of exposed coal miners each year. Because no available data indicate the yearly rate at which mine operators would reduce miner exposures to levels below the action level, MSHA assumed the share of exposed coal miners would decline linearly from Year 1 to Year 7 until reaching a steady value in Year 7 and subsequent years.

Table VII-23. Exposed Coal Miners Based on MSHA Samples

Year	Coal Miners Sampled	Projected Exposed Coal Miners	Exposed Coal Miners Sampled by MSHA

	(A)	(B)	(C)=(A)x(B)
1	10,521	5.5%	579
2	10,521	5.4%	568
3	10,521	5.3%	558
4	10,521	5.3%	558
5	10,521	5.2%	547
6	10,521	5.1%	537
7	10,521	5.0%	526
8	10,521	5.0%	526
9	10,521	5.0%	526
10	10,521	5.0%	526
11	10,521	5.0%	526

Note: The number of coal miners sampled by MSHA in column (C) is rounded.

Not all exposed coal miners identified by MSHA samples would be required to take mandatory medical examinations, as some exposed miners would be excluded because they have taken voluntary or mandatory medical examinations in accordance with § 72.100.

Unlike the voluntary medical examinations for new MNM miners in proposed § 60.15(b)(3), under § 72.100(c) the medical examinations would be mandatory for new coal miners entering the industry. The frequency of mandatory examinations for coal miners is similar to that of voluntary examinations for MNM miners specified in the proposed rule: an initial examination no later than 30 days after beginning employment, a follow-up examination no later than 3 years after the initial examination, and a follow-up examination no later than 2 years after the 3-year follow-up examinations if the coal miner is identified as high-risk.

MSHA assumes the total number of coal miners would remain constant at 72,768 over the analysis period. MSHA estimates that the average tenure (number of years on the job) of a coal miner (before leaving the mining industry) is 32 years, which is derived from a 2012 survey conducted by NIOSH.[43] Assuming an average miner staying employed for 32 years in mining,

[43] The 2012 report by NIOSH, entitled, "National Survey of the Mining Population: Part 1: Employees," (https://www.cdc.gov/niosh/mining/works/coversheet776.html) includes the findings of its 2008 survey on mine operators and miners in the U.S. (Details on the survey methodology and results are available in the link.) The survey found the average mining experience for coal miners was 16.0 years. These averages reflected the average number of years that respondent miners had worked at mines at the time the survey was conducted. MSHA considered these average mine experiences to represent approximately one half of the mining tenure these miners would have (the years in mining when they leave). Conversely, MSHA estimated miners' total expected tenure to be twice these average mining experiences.

MSHA estimates that 1/32 of all coal miners (2,274 miners) would leave and be replaced by the same number of new miners joining the industry each year.

MSHA uses the same methodology to estimate the number of coal miners that receive mandatory examinations under the 2024 Silica Final Rule's requirements in § 72.100(c) as for MNM miners that would receive voluntary examinations under proposed § 60.15(b)(3).

Table VII-24. Mandatory Initial, 3-Year Follow-up, and 2-Year Follow-up Examinations for New Miners Within 5 Years of Joining Coal Mines

Year	New Coal Miners	Initial Exams	3-Year Follow-up Exams	2-Year Follow-up Exams for High-Risk Miners	Total Mandatory Exams of New Coal Miners
	(A)	(B)=(A)x100%	(C)=(B)x100%	(D)=(C)x5%	(B)+(C)+(D)
1	2,274	2,274	2,274	114	4,662
2	2,274	2,274	2,274	114	4,662
3	2,274	2,274	2,274	114	4,662
4	2,274	2,274	2,274	114	4,662
5	2,274	2,274	2,274	114	4,662
6	2,274	2,274	2,274	114	4,662
7	2,274	2,274	2,274	114	4,662
8	2,274	2,274	2,274	114	4,662
9	2,274	2,274	2,274	114	4,662
10	2,274	2,274	2,274	114	4,662
11	2,274	2,274	2,274	114	4,662

Note: The numbers of miners and examinations are rounded.

Similar to the voluntary examinations for MNM miners in proposed § 60.15(b)(1) and (b)(2), each coal mine operator would be required to provide voluntary examinations at least every 5 years to all miners employed at a coal mine, in accordance with § 72.100(b). The voluntary examinations would be available during a 6-month period that begins no less than 3.5 years and not more than 4.5 years from the end of the last 6-month period.

MSHA uses the same methodology to estimate the number of coal miners that receive voluntary examinations as MNM miners using a 25 percent participation rate.

Table VII-25. Voluntary 5-Year Examinations for Coal Miners (25 Percent Participation Rate)

Year	5-Year Voluntary Exams Offered	Miners Offered Voluntary Exams	New Miners Receiving Mandatory Exams	Miners Eligible for Voluntary 5-Year Exams	Voluntary 5-Year Exams of Coal Miners
	(A)	(B)	(C)	(D)=(B)-(C)	(E)=(D)x25%

1	Yes	72,768	4,662	68,106	17,027
2	No	0	4,662	0	0
3	No	0	4,662	0	0
4	No	0	4,662	0	0
5	No	0	4,662	0	0
6	Yes	72,768	4,662	68,106	17,027
7	No	0	4,662	0	0
8	No	0	4,662	0	0
9	No	0	4,662	0	0
10	No	0	4,662	0	0
11	Yes	72,768	4,662	68,106	17,027

Note: The numbers of examinations are rounded.

All exposed coal miners would be required to take mandatory medical examinations if identified by MSHA samples unless they have already taken voluntary or mandatory examinations within the last two years and thus would be excluded from mandatory examinations. To calculate the number of mandatory examinations of exposed miners, MSHA first estimates the share of miners taking examinations within the last two years, including both voluntary and mandatory examinations.

Table VII-26 presents the number of total coal miners and examinations within the last two years, including mandatory initial, 3-year follow-up, and 2-year follow-up (if identified as high-risk) examinations, as well as voluntary 5-year examinations as specified in § 72.100.

Table VII-26. Examinations within the Last Two Years for Coal Miners (25 Percent Participation Rate)

Year	Total Coal Miners	Mandatory Exams for New Miners	5-Year Voluntary Exams for All Miners	Total Exams in that Year	Total Exams in Prior Year	Total Exams Year 2 Years Ago	Total Exams for Coal Miners within the Last 2 Years
	(A)	(B)	(C)	(D)=(B)+(C)	(E)	(F)	(G)= (D)+(E)+(F)
1	72,768	4,662	17,027	21,688	4,662	4,662	31,012
2	72,768	4,662	0	4,662	21,688	4,662	31,012
3	72,768	4,662	0	4,662	4,662	21,688	31,012
4	72,768	4,662	0	4,662	4,662	4,662	13,985
5	72,768	4,662	0	4,662	4,662	4,662	13,985
6	72,768	4,662	17,027	21,688	4,662	4,662	31,012
7	72,768	4,662	0	4,662	21,688	4,662	31,012
8	72,768	4,662	0	4,662	4,662	21,688	31,012
9	72,768	4,662	0	4,662	4,662	4,662	13,985
10	72,768	4,662	0	4,662	4,662	4,662	13,985
11	72,768	4,662	17,027	21,688	4,662	4,662	31,012

Note: The numbers of miners and examinations are rounded.

MSHA uses the same methodology when calculating the number of mandatory examinations for MNM miners as for coal miners.

Table VII-27 presents the number of total coal miners, examinations (including initial, 3-year follow-up, 2-year follow-up (if identified as high-risk), and 5-year examinations), and total number of examinations received within the last two years.

Table VII-27. Mandatory Examinations for Exposed Coal Miners (25 Percent Participation Rate)

Year	Coal Miners	Miners Receiving Exams Within the Last 2 Years			Percent of Miners Examined Within the Last 2 Years	Exposed Coal Miners	Mandatory Exams of Exposed Coal Miners
		Miners Receiving Exams within the Last 2 Years	Exposed Miners Examined Last Year	Exposed Miners Examined 2 Years Ago			
	(A)	(B)	(C)	(D)	(E)=((B)+(C)+(D))/(A)	(F)	(G)=(F)x(1-(E))
1	72,768	31,012	0	0	43%	579	332
2	72,768	31,012	332	0	43%	568	323
3	72,768	31,012	323	332	44%	558	315
4	72,768	13,985	315	323	20%	558	446
5	72,768	13,985	446	315	20%	547	436
6	72,768	31,012	436	446	44%	537	301
7	72,768	31,012	301	436	44%	526	297
8	72,768	31,012	297	301	43%	526	298
9	72,768	13,985	298	297	20%	526	421
10	72,768	13,985	421	298	20%	526	420
11	72,768	31,012	420	421	44%	526	296

Note: The numbers of miners and examinations are rounded. Mandatory examinations begin in Year 1 and because of this there are no prior mandatory examinations.

d. Total Examinations

The table below summarizes the number of both voluntary and mandatory examinations for MNM miners and mandatory examinations for coal miners under the proposed rule.

Table VII-28. Total Examinations for Miners in First 11 Years (25 Percent Participation Rate)

Year	Voluntary Exams for New MNM Miners within 5-Year of Joining	Voluntary 5-year Exams for all MNM Miners	Mandatory Exams for Exposed MNM Miners	Total Exams for MNM Miners	Mandatory Exams for Exposed Coal Miners	Total Exams

1	2,098	44,056	519	46,673	332	47,005
2	2,098	0	462	2,560	323	2,884
3	2,098	0	407	2,505	315	2,820
4	2,623	0	479	3,102	446	3,547
5	2,623	0	417	3,039	436	3,475
6	2,646	43,525	267	46,438	301	46,739
7	2,646	0	221	2,867	297	3,164
8	2,646	0	221	2,867	298	3,165
9	2,646	0	294	2,940	421	3,361
10	2,646	0	294	2,940	420	3,360
11	2,646	43,525	221	46,392	296	46,688

Note: The numbers of examinations are rounded.

MSHA also estimates the number of voluntary examinations under a 75 percent participation rate in the table below.

Table VII-29. Total Examinations for Miners in First 11 Years (75 Percent Participation Rate)

Year	Voluntary Exams for New MNM Miners within 5-Year of Joining	Voluntary 5-year Exams for all MNM Miners	Mandatory Exams for Exposed MNM Miners	Total Exams for MNM Miners	Mandatory Exams for Exposed Coal Miners	Total Exams
1	6,294	132,167	173	138,635	61	138,696
2	6,294	0	135	6,429	60	6,489
3	6,294	0	102	6,396	58	6,454
4	11,015	0	436	11,450	450	11,900
5	11,015	0	368	11,382	438	11,821
6	11,227	127,270	47	138,544	50	138,594
7	11,227	0	39	11,266	52	11,318
8	11,227	0	39	11,266	55	11,321
9	11,227	0	252	11,479	424	11,903
10	11,227	0	251	11,478	421	11,900
11	11,227	127,270	39	138,536	50	138,585

Note: The numbers of examinations are rounded.

Based on unit costs of a medical examination for MNM and coal miners presented in the tables above, Table VII-30 indicates that average annualized costs would range from $17.1 million (at a 0 percent discount rate) to $18.6 million (at a 7 percent discount rate), and total costs over 60 years would range from $261.3 million to $1 billion.

Table VII-30. Summary of Estimated Medical Surveillance Costs for Miners by Participation Rate and Discount Rate (in millions of 2024 dollars)

Cost Type	Discount Rate		
	0 percent	3 percent	7 percent
60-year Total Costs (millions of 2024 dollars)			

25 percent participation rate	$502.8	$242.0	$129.5
75 percent participation rate	$1,548.9	$740.7	$393.0
Average of participation rates	*$1,025.9*	*$491.3*	*$261.3*
Annualized Cost (millions of 2024 dollars)			
25 percent participation rate	$8.4	$8.7	$9.2
75 percent participation rate	$25.8	$26.8	$28.0
Average of participation rates	*$17.1*	*$17.8*	*$18.6*

5. Updates to OSHA Respiratory Protection Standard (§ 60.14(c)(2))

i. 2024 Silica Final Rule

In the 2024 Silica Final Rule, § 60.14(c)(2) requires mine operator to have a written respiratory protection program that meets requirements in accordance with ASTM F3387-19, *Standard Practice for Respiratory Protection.* The 2024 Silica Final Rule requires mine operators who would allow or direct miners to use respirators for protection from airborne hazards to develop a written respiratory protection program that meets the requirements of ASTM F3387-19, an industry consensus standard.

ii. Proposed Rule

Under the proposed rule, mine operators would follow the requirements for respiratory protection from OSHA's Respiratory Protection Standard, instead of the ASTM F3387-19 standard. The OSHA Respiratory Protection Standard includes provisions for voluntary respirator use, which would provide miners with access to greater protection from respirator use when their exposure is between the action level and the PEL. The proposed rule contains language that would require mine operators' written respiratory protection programs to conform to OSHA Respiratory Protection requirements set forth in 29 CFR 1910.134, rather than ASTM F3387-19.

iii. Summary of Changes

The OSHA Respiratory Protection Standard would be more protective and appropriate for the mining industry. It also explicitly addresses voluntary respirator use and requires operators to implement certain elements of a written respiratory protection program for safe

voluntary respirator use. To err on the side of overestimation, MSHA has determined that amending the 2024 Silica Final Rule's requirements in § 60.14(c)(2) would not change mine operators' compliance costs as it does not change requirements for respiratory protection programs, such as written standard operating procedures or fit testing.

6. Familiarization Costs

MSHA recognizes there are potential one-time and recurring costs associated with the rule for the mining community to get familiar with the rule. Regulatory familiarization costs represent direct costs on businesses for familiarizing themselves with the compliance requirements within the rule.

i. 2024 Silica Final Rule

In the 2024 Silica Final Rule, regulatory familiarization costs are not considered.

ii. Proposed Rule

Under the proposed rule, mine operators would incur familiarization costs. MSHA assumes that regulatory familiarization costs are estimated as a function of mine size: 0.5 hour for mines with 20 or fewer employees, 1 hour for mines with 20 to 100 employees, 1.5 hours for mines with 100 to 500 employees, and 2 hours for mines with more than 500 employees. MSHA estimates that it takes a mine supervisor, earning $88.08 per hour at coal mines and $71.08 at MNM mines, to review and understand the proposed regulation.

MSHA assumes the cost of rule familiarization for this proposal is low because mine operators already have knowledge of the respirable crystalline silica requirements in 30 CFR part 60 after the 2024 Silica Final Rule was published, combined with familiarity with existing requirements for sampling (airborne contaminants in 30 CFR parts 56 and 57 and respirable coal mine dust sampling in 30 CFR parts 70, 71 and 90), sampling devices (30 CFR parts 18 and 74), respiratory programs (30 CFR parts 56, 57 and 72), and periodic medical surveillance (30 CFR part 72). Additionally, MSHA provides compliance assistance in the development and

improvement of health and safety programs, which also lowers familiarization cost for mine operators and contractors.

iii. Summary of Changes

The proposed rule changes in Part 60 are consistent with the protections for miner safety and health in the 2024 Silica Final Rule standards and only clarify MSHA requirements in the Agency's standards. Amending the provisions in this part would add compliance costs concerning reading, understanding, and communicating the new requirements in the proposed rule.

7. Summary

i. 2024 Silica Final Rule

Under the 2024 Silica Final Rule standards, total compliance costs are largely derived from the 2024 Silica Final Rule FRIA Table 4-33 and the costs are inflated to 2024 dollars using the U.S. GDP Price Deflator.

As shown in Table VII-31, MSHA projects that the annualized compliance costs would total $108.1 million per year over 60 years at a 7 percent discount rate. By provision, annualized costs for exposure monitoring would be $65.4 million per year, which accounts for 60 percent of total annualized compliance costs. Annualized costs of exposure controls are $15.1 million, representing 14 percent of total annualized costs. Respiratory protection comprises about 3 percent of total annualized compliance costs at $3.7 million. The costs of medical surveillance are $22.5 million, which is about 21 percent of total annualized costs. The costs of adopting the ASTM standard adds another $1.5 million (1 percent). Approximately 92 percent of compliance costs are estimated to come from MNM mines and the remaining 8 percent from coal mines.

Table VII-31. Total Annualized Compliance Costs by Rule Provision and Mine Sector, 2024 Silica Final Rule (in millions of 2024 dollars)

Mine Sector	0 Percent Discount Rate		3 Percent Discount Rate		7 Percent Discount Rate	
	Annualized Cost (millions of dollars)	Percent Subtotal	Annualized Cost (millions of dollars)	Percent Subtotal	Annualized Cost (millions of dollars)	Percent Subtotal

All Mines						
Exposure Monitoring	$56.40	57.8%	$59.85	58.9%	$65.39	60.5%
Exposure Controls	$14.87	15.3%	$14.97	14.7%	$15.11	14.0%
Respiratory Protection	$3.65	3.7%	$3.65	3.6%	$3.66	3.4%
Medical Surveillance [a]	$21.32	21.9%	$21.75	21.4%	$22.46	20.8%
Subtotal, Part 60 Costs	*$96.23*	*98.7%*	*$100.22*	*98.7%*	*$106.62*	*98.7%*
ASTM Standard Updates	$1.27	1.3%	$1.33	1.3%	$1.45	1.3%
Total	***$97.50***	***100.0%***	***$101.55***	***100.0%***	***$108.07***	***100.0%***
As Percent of All Mines	***100.0%***		***100.0%***		***100.0%***	
MNM						
Exposure Monitoring	$50.58	56.8%	$53.86	58.0%	$59.12	59.7%
Exposure Controls	$12.82	14.4%	$12.90	13.9%	$13.01	13.1%
Respiratory Protection	$3.58	4.0%	$3.59	3.9%	$3.59	3.6%
Medical Surveillance [a]	$21.32	24.0%	$21.75	23.4%	$22.46	22.7%
Subtotal, Part 60 Costs	*$88.30*	*99.2%*	*$92.09*	*99.2%*	*$98.19*	*99.2%*
ASTM Standard Updates	$0.68	0.8%	$0.72	0.8%	$0.79	0.8%
MNM Subtotal	***$88.97***	***100.0%***	***$92.81***	***100.0%***	***$98.98***	***100.0%***
As Percent of All Mines	***91.3%***		***91.4%***		***91.6%***	
Coal						
Exposure Monitoring	$5.82	68.2%	$5.99	68.5%	$6.27	68.9%
Exposure Controls	$2.05	24.1%	$2.07	23.7%	$2.10	23.1%
Respiratory Protection	$0.07	0.8%	$0.07	0.7%	$0.07	0.7%
Medical Surveillance [b]	-	-	-	-	-	-
Subtotal, Part 60 Costs	*$7.94*	*93.1%*	*$8.12*	*93.0%*	*$8.43*	*92.7%*
ASTM Standard Updates	$0.59	6.9%	$0.61	7.0%	$0.66	7.3%
Coal Subtotal	***$8.53***	***100.0%***	***$8.74***	***100.0%***	***$9.09***	***100.0%***
As Percent of All Mines	***8.7%***		***8.6%***		***8.4%***	

Notes: [a] Medical surveillance cost is presented as the average of the assumed participation rates of 25 percent and 75 percent.
[b] No Medical Surveillance costs assigned to coal because that sector is already required to have equivalent medical surveillance program.

ii. Proposed Rule

Under the proposed rule, MSHA totals the annualized costs of each of the estimated cost components examined above: exposure monitoring, exposure controls (engineering and administrative controls), respiratory protection, medical surveillance, updates to the OSHA Respiratory Protection Standard, and familiarization. As shown in Table VII-32, MSHA estimates that the annualized compliance costs would total $79.4 million per year over 60 years at a 7 percent discount rate. By provision, exposure monitoring accounts for $40.5 million per year, which is 51 percent of total annualized costs. Annualized costs of exposure controls are $15.1 million, representing 19 percent of total annualized costs. Respiratory protection would

comprise about 5 percent of total annualized compliance costs at $3.7 million. The costs of medical surveillance are $18.6 million, about 23 percent of total annualized costs. The cost of adopting the OSHA Respiratory Protection Standard would add another $1.5 million or 2 percent. Familiarization with the proposed rule would be $0.05 million and represents 0.1 percent of total annualized costs. Approximately 92 percent of compliance costs are estimated to be from MNM mines while the remaining 8 percent from coal mines.

Table VII-32. Total Annualized Compliance Costs by Rule Provision and Mine Sector, Proposed Rule (in millions of 2024 dollars)

Mine Sector	0 Percent Discount Rate		3 Percent Discount Rate		7 Percent Discount Rate	
	Annualized Cost (millions of dollars)	Percent Subtotal	Annualized Cost (millions of dollars)	Percent Subtotal	Annualized Cost (millions of dollars)	Percent Subtotal
All Mines						
Exposure Monitoring	$34.32	48.2%	$36.69	49.3%	$40.50	51.0%
Exposure Controls	$14.87	20.9%	$14.97	20.1%	$15.11	19.0%
Respiratory Protection	$3.65	5.1%	$3.65	4.9%	$3.66	4.6%
Medical Surveillance [a]	$17.10	24.0%	$17.75	23.9%	$18.61	23.4%
Subtotal, Part 60 Costs	*$69.94*	*98.2%*	*$73.06*	*98.2%*	*$77.88*	*98.1%*
OSHA Standard Updates	$1.27	1.8%	$1.33	1.8%	$1.45	1.8%
Familiarization	$0.02	0.03%	$0.03	0.04%	$0.05	0.1%
Total	***$71.22***	***100.0%***	***$74.43***	***100.0%***	***$79.38***	***100.0%***
As Percent of All Mines	***100.0%***		***100.0%***		***100.0%***	
MNM						
Exposure Monitoring	$30.98	47.7%	$33.23	48.9%	$36.85	50.7%
Exposure Controls	$12.82	19.7%	$12.90	19.0%	$13.01	17.9%
Respiratory Protection	$3.58	5.5%	$3.59	5.3%	$3.59	4.9%
Medical Surveillance [a]	$16.90	26.0%	$17.56	25.8%	$18.42	25.3%
Subtotal, Part 60 Costs	*$64.28*	*98.9%*	*$67.27*	*98.9%*	*$71.88*	*98.9%*
OSHA Standard Updates	$0.68	1.0%	$0.72	1.1%	$0.79	1.1%
Familiarization	$0.02	0.03%	$0.03	0.04%	$0.04	0.1%
MNM Subtotal	***$64.97***	***100.0%***	***$68.02***	***100.0%***	***$72.70***	***100.0%***
As Percent of All Mines	***91.2%***		***91.4%***		***91.6%***	
Coal						
Exposure Monitoring	$3.34	53.4%	$3.45	53.9%	$3.64	54.6%
Exposure Controls	$2.05	32.9%	$2.07	32.3%	$2.10	31.4%
Respiratory Protection	$0.07	1.0%	$0.07	1.0%	$0.07	1.0%
Medical Surveillance [a]	$0.20	3.2%	$0.20	3.1%	$0.20	2.9%
Subtotal, Part 60 Costs	*$5.66*	*90.6%*	*$5.79*	*90.3%*	*$6.00*	*90.0%*
OSHA Standard Updates	$0.59	9.4%	$0.61	9.6%	$0.66	9.9%
Familiarization	$0.003	0.04%	$0.004	0.1%	$0.01	0.1%
Coal Subtotal	***$6.25***	***100.0%***	***$6.41***	***100.0%***	***$6.67***	***100.0%***
As Percent of All Mines	***8.8%***		***8.6%***		***8.4%***	

Note: [a] Medical surveillance cost is presented as the average of the assumed participation rates of 25 percent and 75 percent.

iii. Summary of Changes

MSHA calculates cost savings from the proposed rule by comparing compliance costs of the 2024 Silica Final Rule and the proposed rule. Table VII-33 presents estimated differences between annualized exposure monitoring costs under the 2024 Silica Final Rule and the proposed rule. Compared with the 2024 Silica Final Rule, it is estimated that annualized costs of exposure monitoring under the proposed rule would decrease by $24.9 million (at a 7 percent discount rate). The breakdown of annualized exposure monitoring cost savings is estimated to be as follows: costs of first-time sampling would decrease by $3.6 million per year, above-action-level sampling would decrease by $13.6 million, and corrective actions sampling would not change. Since periodic evaluations and post-evaluation sampling would no longer occur, the costs are projected to drop to zero, a decrease of $4.0 and $7.7 million, respectively. The proposed rule introduces two new requirements: as-needed sampling would add an annualized cost of $3.1 million, and above-action-level respirator purchases and maintenance would add an annualized cost of $0.8 million.

Table VII-33. Total Annualized Exposure Monitoring Cost Savings by Mine Sector, between 2024 Silica Final Rule and Proposed Rule (in millions of 2024 dollars)

Cost Type	Total Cost over 60 Years	Annualized Costs		
		0% Discount Rate	3% Discount Rate	7% Discount Rate
All Mines				
First- and second-time sampling	$91.2	$1.5	$2.3	$3.6
Above-action-level - sampling	$753.9	$12.6	$13.0	$13.6
Above-action-level - respirators	-$34.7	-$0.6	-$0.7	-$0.8
Corrective actions sampling	$0.0	$0.0	$0.0	$0.0
Process change evaluations	$242.9	$4.0	$4.0	$4.0
Post-evaluation sampling	$459.8	$7.7	$7.7	$7.7
As-needed sampling	-$188.6	-$3.1	-$3.1	-$3.1
Total	***$1,324.5***	***$22.1***	***$23.2***	***$24.9***
MNM				
First- and second-time sampling	$81.2	$1.4	$2.0	$3.2
Above-action-level - sampling	$674.2	$11.2	$11.7	$12.3

Above-action-level - respirators	-$23.6	-$0.4	-$0.5	-$0.6
Corrective actions sampling	$0.0	$0.0	$0.0	$0.0
Process change evaluations	$217.6	$3.6	$3.6	$3.6
Post-evaluation sampling	$383.6	$6.4	$6.4	$6.4
As-needed sampling	-$157.1	-$2.6	-$2.6	-$2.6
MNM Subtotal	***$1,175.8***	***$19.6***	***$20.6***	***$22.3***
Coal				
First- and second-time sampling	$10.0	$0.2	$0.2	$0.4
Above-action-level - sampling	$79.7	$1.3	$1.3	$1.3
Above-action-level - respirators	-$11.1	-$0.2	-$0.2	-$0.2
Corrective actions sampling	$0.0	$0.0	$0.0	$0.0
Process change evaluations	$25.4	$0.4	$0.4	$0.4
Post-evaluation sampling	$76.2	$1.3	$1.3	$1.3
As-needed sampling	-$31.5	-$0.5	-$0.5	-$0.5
Coal Subtotal	***$148.7***	***$2.5***	***$2.5***	***$2.6***

Table VII-34 compares annualized compliance costs at a 0 and 7 percent discount rate. MSHA estimates the proposed rule would have annualized cost savings of $26.3 and $28.7 million in 2024 dollars at a discount rate of 0 and 7 percent, respectively. At a discount rate of 7 percent, the majority of annualized cost savings associated with the proposed rule would be attributable to changes in the exposure monitoring requirements of proposed § 60.12, accounting for 87 percent of total cost savings at $24.9 million. Medical surveillance would make up 13 percent of total cost savings at $3.9 million a year. The MNM sector would be expected to realize $26.3 million (92 percent of the savings), and the coal sector $2.4 million (8 percent) in annualized compliance cost savings.

Table VII-34. Total Annualized Compliance Costs and Cost Savings by Rule Provision and Mine Sector, between 2024 Silica Final Rule and Proposed Rule (in millions of 2024 dollars)

Mine Sector	0 Percent Discount Rate			7 Percent Discount Rate		
	2024 Silica Final Rule	Proposed Rule	Cost Saving	2024 Silica Final Rule	Proposed Rule	Cost Saving
All Mines						
Exposure Monitoring	$56.40	$34.32	$22.08	$65.39	$40.50	$24.89
Exposure Controls	$14.87	$14.87	$0.00	$15.11	$15.11	$0.00
Respiratory Protection	$3.65	$3.65	$0.00	$3.66	$3.66	$0.00
Medical Surveillance [a]	$21.32	$17.10	$4.22	$22.46	$18.61	$3.85
Subtotal, Part 60 Costs	*$96.23*	*$69.94*	*$26.29*	*$106.62*	*$77.88*	*$28.74*
ASTM/OSHA Standard Updates	$1.27	$1.27	$0.00	$1.45	$1.45	$0.00
Familiarization	$0.00	$0.02	-$0.02	$0.00	$0.05	-$0.05
Total	***$97.50***	***$71.22***	***$26.28***	***$108.07***	***$79.38***	***$28.70***

As Percent of All Mines	***100.0%***	***100.0%***	***100.0%***	***100.0%***	***100.0%***	***100.0%***
MNM						
Exposure Monitoring	$50.58	$30.98	$19.60	$59.12	$36.85	$22.27
Exposure Controls	$12.82	$12.82	$0.00	$13.01	$13.01	$0.00
Respiratory Protection	$3.58	$3.58	$0.00	$3.59	$3.59	$0.00
Medical Surveillance [a]	$21.32	$16.90	$4.42	$22.46	$18.42	$4.05
Subtotal, Part 60 Costs	*$88.30*	*$64.28*	*$24.02*	*$98.19*	*$71.88*	*$26.31*
ASTM/OSHA Standard Updates	$0.68	$0.68	$0.00	$0.79	$0.79	$0.00
Familiarization	$0.00	$0.02	-$0.02	$0.00	$0.04	-$0.04
MNM Subtotal	***$88.97***	***$64.97***	***$24.00***	***$98.98***	***$72.70***	***$26.27***
As Percent of All Mines	***91.3%***	***91.2%***	***91.3%***	***91.6%***	***91.6%***	***91.6%***
Coal						
Exposure Monitoring	$5.82	$3.34	$2.48	$6.27	$3.64	$2.62
Exposure Controls	$2.05	$2.05	$0.00	$2.10	$2.10	$0.00
Respiratory Protection	$0.07	$0.07	$0.00	$0.07	$0.07	$0.00
Medical Surveillance [a]	$0.00	$0.20	-$0.20	$0.00	$0.20	-$0.20
Subtotal, Part 60 Costs	*$7.94*	*$5.66*	*$2.28*	*$8.43*	*$6.00*	*$2.43*
ASTM/OSHA Standard Updates	$0.59	$0.59	$0.00	$0.66	$0.66	$0.00
Familiarization	$0.00	$0.003	-$0.003	$0.00	$0.01	-$0.01
Coal Subtotal	***$8.53***	***$6.25***	***$2.28***	***$9.09***	***$6.67***	***$2.42***
As Percent of All Mines	***8.7%***	***8.8%***	***8.7%***	***8.4%***	***8.4%***	***8.4%***

Note: [a] Medical surveillance cost is presented as the average of the assumed participation rates of 25 percent and 75 percent.

Under the proposed rule, MSHA estimates that mine operators would incur aggregate annualized costs of $71-$79 million in 2024 dollars at 0, 3, and 7 percent discount rate. These annualized compliance costs are expected to comprise about 0.06 percent of annual estimated industry revenues, well below the 1 percent threshold that represents a presumption of no significant economic impacts to the industry.

This rule, if finalized, is expected to be a deregulatory action under E.O. 14192. Using a perpetual time horizon to allow cost comparisons under E.O. 14192, the Department estimates that the annualized cost savings amount to $24 million in 2024 dollars if Year 1 is 2027, using a 7 percent discount rate.

VIII. Regulatory Alternatives

MSHA examined three regulatory alternatives in the 2024 Silica Final Rule, which comparatively present alternative approaches for lowering miners' exposure to respirable

crystalline silica and improving respiratory protection for all airborne contaminants (89 FR 28389).

The first alternative contains less stringent provisions of lower frequency exposure monitoring but includes no change to the PEL and action level. This regulatory alternative would result in lower costs of compliance. However, MSHA thought that more frequent sampling would provide multiple unquantified benefits, including closely monitored miner exposure trends, higher confidence of continued compliance, and better protection of miners' health. Therefore, this regulatory alternative was not selected.

The second alternative combines less stringent exposure monitoring with a more stringent PEL at 25 $\mu g/m^3$. To meet the PEL of 25 $\mu g/m^3$, mine operators would incur substantially greater engineering control costs when compared to the estimated compliance costs for reaching a PEL of 50 $\mu g/m^3$. This regulatory alternative would increase miner protection, resulting in measurable increases in avoided mortality and other health benefits as compared to a PEL of 50 $\mu g/m^3$. MSHA did not select this regulatory alternative because the net benefits of this alternative would be negative due to much higher compliance costs. Additionally, MSHA determined that meeting a PEL of 25 $\mu g/m^3$ is not achievable for all mines. Therefore, MSHA is not selecting this alternative under the proposed rule.

The third regulatory alternative examines a different methodology for calculating miners' exposures and assesses the impact on compliance cost reductions and other effects of using the full-shift TWA instead of the full-shift, 8-hour TWA specified in this proposed rule. In the 2024 Silica Final Rule, MSHA did not select this alternative.

Additionally, the proposal would likely be more burdensome for some operators and less burdensome for others, while maintaining equal or greater protections compared to the 2024 Silica Final Rule standards; therefore, the Agency has not identified a viable alternative to this rule that would provide the desired contrast and analysis, beyond maintaining the status quo of the 2024 Silica Final Rule.

Under the Mine Act, MSHA is not required to use estimated net benefits as the basis for its decision. MSHA requests comments on the assumptions and methodologies of regulatory alternatives and also asks for any data or quantitative information that may be useful in evaluating the estimated costs and benefits associated with the alternatives.

IX. Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996, requires preparation of an Initial Regulatory Flexibility Analysis (IRFA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule "will not, if promulgated, have a significant economic impact on a substantial number of small entities." 5 U.S.C. 605(b). The RFA defines small entities to include small businesses, small organizations, including not-for-profit organizations, and small governmental jurisdictions.

This proposed rule amends standards established by the 2024 Silica Final Rule. The 2024 Silica Final Rule included a regulatory flexibility analysis that concluded the Agency could certify the standards would not have a significant economic impact on a substantial number of small entities. That regulatory flexibility analysis identified the total number of regulated small entities, evaluated the compliance costs for small entities, and compared the annual compliance costs relative to annual revenue. Compliance costs were found to be less than 0.5 percent of the revenues for all small entities and less for small entities with fewer than 5 employees.

Key inputs for MSHA's identification of small entities have not changed meaningfully in the interim period since the publication of the 2024 Silica Final Rule. MSHA estimated there were 5,462 mine controllers that met the definition of small entity in the 2024 Silica Final Rule analysis.

This proposed rule contains provisions that would affect costs to small mines. MSHA considered the changes in costs to small mines when developing this proposed rule under the provisions of the RFA. The PRIA presented in Section VII of this preamble finds that the

estimated cost burdens of this proposed rule are substantially lower than the standards established by the 2024 Silica Final Rule. The annualized compliance costs are projected to comprise less than 0.06 percent of annual estimated industry revenues. Thus, MSHA considers the conclusions of the April 2024 analysis to still be applicable, and compliance costs are expected to remain less than 0.5 percent of revenues for small entities.

MSHA initially concludes that the impacts of this proposed rule would not have a "significant economic impact on a substantial number of small entities" and that the preparation of an IRFA is not warranted. MSHA will transmit this certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

In keeping with the 2024 Silica Final Rule, MSHA commits to provide compliance assistance (including training and best practice materials) to all mine operators, with an emphasis on small operators.

MSHA requests comments on whether the proposed rule would significantly increase costs for small entities relative to the standards established in the 2024 Silica Final Rule.

X. Paperwork Reduction Act of 1995

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) provides for the Federal Government's collection, use, and dissemination of information. The goals of the Paperwork Reduction Act include minimizing paperwork and reporting burdens and ensuring the maximum possible utility from the information that is collected under 5 CFR part 1320. The Paperwork Reduction Act requires Federal agencies to obtain approval from OMB before requesting or requiring "a collection of information" from the public.

The proposed amendments to 30 CFR part 60 in this proposed rule would impose no new information collection or recordkeeping requirements. However, the proposed rule would result in substantive changes to a currently approved information collection request (ICR), OMB Control Number 1219-0156 "*Respirable Crystalline Silica Standard*." The currently approved

ICR under OMB Control Number 1219-0156 covers requirements in Part 60, which includes a uniform PEL for respirable crystalline silica and other requirements to protect miners' health, such as exposure monitoring, periodic evaluations, post-evaluation sampling, corrective actions to be taken when a miner's exposure exceeds the PEL, and medical surveillance for metal and nonmetal (MNM) mines. The 2024 Silica Final Rule standard in Part 60 also incorporates by reference ASTM F3387-19, "*Standard Practice for Respiratory Protection*." The proposed rule would update requirements in Part 60 for methods of compliance, exposure monitoring, respiratory protection, medical surveillance, and recordkeeping.

The proposed rule would also amend the respiratory protection requirement in proposed § 60.14(c)(2) by replacing the reference to ASTM F3387-19 with a reference to the OSHA Respiratory Protection Standard in 29 CFR 1910.134, "*Respiratory protection*." In addition, the proposed rule would include a reference to the OSHA Respiratory Protection Standard in 30 CFR parts 56, 57, and 72, which would be a conforming amendment consistent with the proposed change to the respiratory protection requirement in Part 60. Both the ASTM and the OSHA standard set forth the requirements for the control of exposures to harmful airborne contaminants and the use of respiratory protective equipment in mines. Whenever respiratory protective equipment is used, its selection, fitting, maintenance, cleaning, training, supervision, and use must meet certain requirements.

The proposed amendments to the respiratory protection requirements would result in non-substantive changes to two existing ICRs: OMB Control Number 1219-0048, "*Respirator Program Records*," for MNM mines; and OMB Control Number 1219-0158, "*Respiratory Protection Program at Coal Mines*." The two ICRs involve recordkeeping requirements under parts 56 and 57 for MNM mines and part 72 for coal mines when respiratory protection is used. However, there would be no changes to the authority or paperwork burden and costs in these information collections from the proposed rule.

A. Existing Information Collection 1219-0156

Type of Review: Revision of a currently approved information collection

OMB Control Number: 1219-0156

Title: Respirable Crystalline Silica Standard

Summary of the Collection of Information:

Highlighted below are the key assumptions, by provision, used in the burden estimates in Table X-1.

1. Exposure Monitoring – Sampling (§ 60.12)

Under proposed § 60.12(e), the mine operator would be required to make a record of each sample, including the sample date, the occupations sampled, and the concentrations of respirable crystalline silica and respirable dust and post the record and the laboratory report on the mine bulletin board and, if applicable, by electronic means, for the next 31 days, upon receipt. Under proposed § 60.16(a)(1), sampling records would be required to be retained at least 5 years from the sample date.

Number of respondents. For proposed § 60.12, the respondents would consist of all active mines because operators of active mines are assumed to perform sampling. MSHA counts the number of active mines in 2019, defining an active mine as one that had at least 520 employment hours (equivalent to 1 person working full time for a quarter of a year) in at least one quarter of 2019. Using this definition, MSHA estimates that a total of 12,631 mines (11,525 MNM mines and 1,106 coal mines) would generate sampling records.

Annual number of responses. Annual responses are summed from several separate activities including all types of sampling: first-time sampling, above-action-level sampling, corrective actions sampling, and as-needed sampling. The estimated average annual number of responses (including sampling conducted by the compliance date or sampling conducted by new mines after beginning operations) would be 161,221, including 26,708 first-time samples, 42,949 above-action-level samples, 42,288 corrective action sampling notifications, 42,288 corrective

action samples, and 6,988 as-needed samples. Details of each type of sampling are discussed below.

1-1. First-time Sampling (§ 60.12(a)(1))

First-time sampling applies to all coal and MNM mines. However, a certain number of mines would be expected to sample only once if the results of these samples are below the action level. Furthermore, after Year 1, all first-time sampling would only be performed by new mines. MSHA estimates that about 2 percent of mines in any given year would be new entrants to the mining industry.

MSHA assumes that all active coal mines (1,106 mines) would conduct first-time sampling in Year 1 of compliance and produce 14,898 samples. In Years 2 and 3, an estimated 22 new coal mines would conduct first-time sampling and produce 298 samples each year. Similarly, MSHA assumes that all 11,525 MNM mines would conduct first-time sampling in Year 1 of compliance and produce 62,144 samples. In Years 2 and 3, 231 new MNM mines would conduct first-time sampling and produce 1,243 samples. MSHA estimates that an annual average of 26,708 first-time samples would be collected from 4,379 mines in the first 3 years of compliance.

1-2. Above-Action-Level Sampling (§ 60.12(a)(3))

The estimated number of above-action-level sampling is calculated based on the following factors: the number of miners with sample results at or above the action level (25 $\mu g/m^3$) but at or below the PEL (50 $\mu g/m^3$), the percent of miners needed for representative samples, and the number of quarters in a year that mines would be in operation. The assumptions MSHA used for the frequency of this type of sampling are based on the number of quarters a mine is active in a year: a mine would be sampled once every 6 months if it operates in 4 quarters, once every 9 months if it operates in 3 quarters, once every 12 months if it operates in 2 quarters, and once every 24 months if it operators in 1 quarter. Estimation of above-action-level sampling does not include costs related to first-time sampling.

MSHA assumes above-action-level sampling would begin in the second half of Year 1 for all mines, and there would be 5,423 above-action-level coal samples and 42,083 MNM samples in the second half of Year 1. MSHA expects the share of samples over the action level would decrease over time because of more mines engaging in increased administrative controls and frequent maintenance and repair. Hence, the number of above-action-level samples is projected to decrease to 5,230 in Year 2 and 5,036 in Year 3 for coal mine compliance. Similarly, above-action-level MNM samples would decrease to 37,719 in Year 2 and to 33,355 in Year 3. Consequently, MSHA estimates that an annual average of 42,949 above-action-level samples would be collected from 2,086 coal and MNM mines in the first 3 years of compliance.

1-3. Corrective Actions Sampling (§ 60.12(b))

MSHA estimates that 129 coal mines and 1,045 MNM mines would need to take corrective actions in Year 1, producing 1,991 corrective actions coal samples and 25,938 corrective actions MNM samples in that year. The number of corrective actions samples is based on the projected share of samples over the PEL, increased by 25 percent to account for some operators needing multiple corrective actions and samples before obtaining a sample below the PEL. The number of corrective actions samples would start with the number of operators with an overexposure in their last sampling event and decreases each year: corrective actions samples are projected to decrease to 3,934 in Year 2 and 3,871 in Year 3 for coal mines, and 48,090 in Year 2 and 43,041 in Year 3 for MNM mines.

Mine operators would have to immediately notify MSHA about each overexposure above the PEL. MSHA assumes that mines would conduct corrective actions sampling for each corrective action taken, thus the number of corrective actions MSHA notifications is the same as the number of corrective action samples.

MSHA estimates that an annual average of 1,097 active mines (969 MNM and 127 coal) would carry out 42,288 corrective actions sampling (39,023 MNM and 3,265 coal) due to

overexposure, send 42,288 notifications to MSHA for each action, and make records of 42,288 corrective actions sampling after each action.

1-4. (New) As-Needed Sampling (§ 60.12(a)(2))

Under the proposed rule, mine operators would conduct sampling as frequently as necessary to assess the full-shift, 8-hour TWA exposure of respirable crystalline silica for each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level. The assumptions MSHA used for the frequency of (newly required) as-needed sampling are based on the number of quarters a mine is active in a year: a mine is sampled once every 12 months if it operates in 4 quarters of a year, once every 18 months if it operates in 3 quarters of a year, and once every 24 months if it operates in 1 or 2 quarters of a year.

MSHA assumes that all active coal mines (1,106 mines) would conduct as-needed sampling each year and produce 1,816 as-needed samples. Similarly, MSHA assumes that all 11,525 MNM mines would conduct as-needed sampling each year and produce 5,172 samples. MSHA estimates that an annual average of 6,988 as-needed samples would be collected in each of the first 3 years of compliance.

Estimated annual burden. MSHA estimates that it takes 15 minutes for an industrial hygienist to record the sample results and 5 minutes to notify MSHA after an overexposure. The estimated average annual burden would be 33,257 hours, including 6,677 hours for first-time sampling, 10,737 hours for above-action-level sampling, 10,572 for corrective actions sampling, 3,524 for corrective actions sampling notification, and 1,747 hours for as-needed sampling.

Estimated recordkeeping cost. MSHA estimates that printing the results of sampling and posting the record on the mine bulletin board would cost $2.28 in terms of paper, ink, and folders for each of the 12,631 active MNM and coal mines. MSHA estimates that this would generate an average annual recordkeeping cost of $28,763.

2. Corrective Actions (§ 60.13)

The proposed rule would not change the 2024 Silica Final Rule corrective actions requirements in § 60.13 that require mine operators to make approved respirators available to affected miners and immediately take corrective actions to lower the concentration of respirable crystalline silica at or below the PEL if any sampling indicates overexposure. Under § 60.13(c), once corrective actions are taken, the mine operator is required to make a record of corrective actions and the dates of the corrective actions. MSHA assumes the paperwork cost of providing respirators required in § 60.13(a)(1) is part of the corrective action records, and the paperwork burden of respirator records is not a separate cost. Under proposed § 60.16(a)(2), corrective actions records must be retained at least 5 years from date of each corrective action. These records must be stored with related sampling records.

Number of respondents. For § 60.13, MSHA assumes only those mines with at least one miner exposed above the PEL would carry out the requirement. Based on the assumptions of corrective actions sampling described above, MSHA estimates that an annual average of 1,097 active mines (969 MNM mines and 127 coal mines) would require corrective actions.

Annual number of responses. MSHA assumes that each corrective actions sample, preceded by a corrective action, would result in a corrective action record. The estimated average annual number of responses would be 42,288 (39,023 MNM and 3,265 coal), the same as the number of corrective actions samples or corrective actions notifications after overexposure.

Estimated annual burden. MSHA estimates that on average it takes 5 minutes for a clerk to record a corrective action. The estimated average annual burden associated with corrective actions would be 3,524 hours.

3. Respiratory Protection - Written Determination (§ 60.14)

Under proposed § 60.14(b), the mine operator would be required to temporarily transfer a miner either to work in a separate area of the same mine or to an occupation at the same mine where respiratory protection is not required, if the miner has a written determination from a PLHCP that the affected miner is unable to wear a respirator. Under proposed § 60.16(a)(3), the

written determination record received from a PLHCP would need to be retained for the duration of a miner's employment plus 6 months.

Number of respondents. For proposed § 60.14(b), MSHA assumes that each mine taking a corrective action would have one miner unable to wear a respirator. Under proposed § 60.12(a)(3), mine operators would have to make respirators available to miners exposed at or above the action level but at or below the PEL for above-action-level sampling. MSHA estimates that the annual average would be 1,943 MNM and 143 coal mines that would have a miner unable to wear a respirator. Additionally, under proposed § 60.13(a)(1), mine operators would be required to make respirators available to miners exposed above the PEL while corrective actions are taken, which is estimated to be an additional 10 percent of MNM mines. MSHA estimates that the annual average would be 2,249 (2,122 MNM and 127 coal) mines that would have a miner unable to wear a respirator.

Annual number of responses. The estimated average annual number of responses would be 4,335, one response in each of the 4,335 affected mines, for records relating to miners' inability to wear respirators.

Estimated annual burden. MSHA assumes it takes 30 minutes for a PLHCP to prepare a written determination record where a miner unable to wear a respirator can be temporarily transferred. The estimated annual burden would be 2,167 hours for records relating to miners' inability to wear respirators.

4. Medical Surveillance (§ 60.15)

Under proposed § 60.15, mine operators would be required to provide medical examinations to both MNM and coal miners. Under proposed § 60.15(e) and (f), mine operators would be required to obtain and maintain a record of written confirmation of medical examination records from a PLHCP, containing the date and a statement that the examination has met the requirements, within 30 days of the medical examination. Under proposed § 60.16(a)(5),

written confirmation of medical examination records received from a PLHCP or specialist would be retained for the duration of the miner's employment plus 6 months.

MSHA identifies 4 different types of medical examinations in Year 1 through Year 3 under proposed § 60.15: voluntary examinations for new miners, voluntary 5-year examinations for existing miners, mandatory examinations for exposed MNM miners, and mandatory examinations for exposed coal miners. A written confirmation of medical examination record would be obtained within 30 days of every medical examination.

Number of respondents. The number of respondents would consist of all active mines because operators of active mines are assumed to provide miners with medical examinations. MSHA counts the number of active mines in 2019, defining an active mine as one that had at least 520 employment hours (equivalent to 1 person working full time for a quarter of a year) in at least one quarter of 2019. Using this definition, MSHA estimates that a total of 12,631 mines (11,525 MNM mines and 1,106 coal mines) would provide medical examinations and obtain written confirmation of medical examinations.

Annual number of responses. MSHA assumes that the number of responses is equal to the number of medical examinations. To be consistent with PRIA estimates, the values presented here are the average number of MNM miners between the assumed participation rates of 25 percent and 75 percent. MSHA estimates that the annual average number of voluntary examinations would be 4,196 for new miners and 29,371 for existing miners. Any follow-up examinations not scheduled to occur within the first 3 years of implementation are not covered by this ICR and related recordkeeping cost are not included in this document.

MNM and coal mine operators would be required to provide mandatory medical examinations to miners exposed above the PEL based on MSHA samples. MSHA estimates an average of 300 examinations for exposed MNM miners and 192 examinations for exposed coal miners each year.

Estimated annual burden. MSHA estimates it would take 15 minutes for a PLHCP or a specialist to prepare a written confirmation of medical examination for each of the 34,058 miners. MSHA estimates the annual burden would be 8,514 hours, including 1,049 hours for new MNM miners, 7,343 hours for current MNM miners, 75 hours for exposed MNM miners, and 48 hours for exposed coal miners.

Estimated annual recordkeeping cost. MSHA estimates that it would cost $11.39 per miner to send a medical examination result to the miner. The estimated annual recordkeeping cost would be $387,772, including $47,775 for new MNM miners, $334,405 for current MNM miners, $3,412 for exposed MNM miners, and $2,180 for exposed coal miners.

5. Providing Access (§ 60.16(b))

Under proposed § 60.16(b), mine operators would promptly provide access to any record upon request from an authorized representative of the Secretary, from an authorized representative of miners, or from miners. MSHA assumes that the cost of providing access would be de minimis.

6. Updates to OSHA Respiratory Protection Standard

Under proposed § 60.14(c)(2), when approved respirators are used, the mine operator would be required to have a written respiratory protection program that meets the requirements of the OSHA Respiratory Protection Standard in 29 CFR 1910.134.

Number of respondents. For the OSHA Respiratory Protection Standard adoption by reference under proposed § 60.14(c)(2), MSHA assumes that a total of 3,411 mine respondents (20 percent of MNM mines or 2,305, and all 1,106 coal mines) would have respiratory protection programs. MSHA further assumes that half of the MNM and coal mines (1,153 MNM and 553 coal mines) would write a new standard operating procedure (SOP) relating to the respiratory protection program and the remaining half would revise existing SOPs in year 1. The number of new mines annually is estimated at 2 percent (46 MNM and 22 coal mines), which are assumed to write respiratory protection SOPs in Years 2 and 3.

Annual number of responses. The estimated average annual number of responses is 4,594 for respiratory protection requirements of writing and updating SOPs. The annual responses of 4,594 concerning the OSHA standard updates are estimated as follows.

First, MSHA assumes that approximately half of the 3,411 existing mine operators affected by respiratory protection requirements, as well as all new mines affected by these requirements, would have to write new respiratory protection SOPs, resulting in an annual average of 614 new written SOPs (1,706 in Year 1, 68 in Year 2, and 68 in Year 3). Second, MSHA makes a similar assumption that the other half of mines affected by respiratory protection requirements would have to revise existing SOPs, generating an annual average of 569 revised SOPs (1,706 in Year 1, 0 in Year 2, and 0 in Year 3). Together, there would be a total of 1,183 records of new and revised SOPs per year.

Additionally, MSHA assumes that 20 percent of existing MNM mines (2,305) and all existing coal mines (1,106) would be affected by the proposed rule to keep records related to OSHA Respiratory Protection Standard. MSHA also assumes that 2 percent of affected mines would be replaced by new mines in Years 2 and 3. (New mines in Year 1 are included in the calculation of existing mines.) The annual responses are projected to be 46 for new MNM mines, 22 for new coal mines, 2,259 for existing MNM mines, and 1,084 for existing coal mines in Year 2 and Year 3. Together, MSHA estimates an annual average of 3,411 records related to OSHA Respiratory Protection Standard.

Combining new and revised SOPs with records related to OSHA Respiratory Protection Standard, MSHA estimates that total annual average records for adopting OSHA standard would be 4,594.

Estimated annual burden. MSHA assumes that, on average, it would take 4 hours for an industrial hygienist to write a new respiratory protection program SOP and 1 hour to revise an existing SOP. MSHA further assumes that it would take 4 hours for a clerk to carry out recordkeeping relating to OSHA Respiratory Protection Standard in the first year and 2 hours in

subsequent years. The estimated total annual burden of incorporating by reference the OSHA respiratory protection standard would be 12,211 hours.

Total recordkeeping burden under the proposed rule is summarized in Table X-1.

Table X-1: Estimated Average Annual Recordkeeping Burden under the Proposed Rule

Rule Provision	Annual Number of Respondents	Annual Number of Responses	Estimated Annual Burden (Hours)
§ 60.12 – Exposure Monitoring	12,631	161,221	33,257
§ 60.13 – Corrective Actions	1,097	42,288	3,524
§ 60.14 – Respiratory Protection	4,335	4,335	2,167
§ 60.15 – Medical Surveillance	12,631	34,058	8,514
§ 60.14 – OSHA Respiratory Protection Standard	4,594	4,594	12,211
Total	***12,631***	***246,496***	***59,674***

Note: Total number of respondents is not a sum of respondents from each row. The respondents (mine operators) carrying out corrective actions and adhering to respiratory protection program requirements are a subset of the respondents carrying out exposure monitoring. The responses and burden hours column totals might not add up to the sum of the items in each column due to rounding.

The total annual average number of respondents would be 12,631; the total annual average number of responses would be 246,496; and the estimated annual average burden would be 59,674 hours.

The following estimates of information collection burden under the proposed rule are summarized in Table X-2.

Affected Public: Businesses or For-Profit

Estimated Number of Respondents: 12,631 respondents in Year 1; 12,631 respondents in Year 2; and 12,631 respondents in Year 3.

Frequency: On Occasion

Estimated Number of Responses: 319,642 responses in Year 1; 220,076 responses in Year 2; and 199,770 responses in Year 3.

Estimated Number of Burden Hours: 92,231 hours in Year 1; 45,128 hours in Year 2; and 41,665 hours in Year 3.

Estimated Recordkeeping Costs to Respondents: $1,085,930 in Year 1; $82,116 in Year 2; and $81,558 in Year 3.

Table X-2: Summary of Information Collection Burden for Proposed Part 60

	Year 1	Year 2	Year 3	3-Year Average
Number of Respondents	12,631	12,631	12,631	12,631
Number of Responses	319,642	220,076	199,770	246,496
Number of Burden Hours	92,231	45,128	41,665	59,674
Recordkeeping Costs	$1,085,930	$82,116	$81,558	$416,535

The number of responses and burden hours would decrease in Year 2 and Year 3 mainly as a result of decreases in sampling in MNM mines.

Number of Respondents: The estimated number of respondents decreases from 47,596 to 12,631 due to the changes in the proposed rule.

Number of Responses: The estimated number of responses decreased from 265,509 to 246,496 due to the changes in the proposed rule.

Annual Time Burden: The estimated annual time burden decreased from 63,972 hours to 59,674 hours due to the changes in the proposed rule.

Annual Recordkeeping Costs: The estimated annual recordkeeping costs decreased from $775,683 to $416,535 due to the changes in the proposed rule.

Table X-3: Summary of Change in Information Collection Burden

	Currently Approved ICR	Proposed Rule	Difference
Number of Respondents	47,596	12,631	-34,965
Number of Responses	265,509	246,496	-19,013
Annual Time Burden	63,972	59,674	-4,298
Annual Recordkeeping Costs	$775,683	$416,535	-$359,149

B. Existing Information Collection 1219-0048

Type of Review: Non-substantive change to currently approved information collection

OMB Control Number: 1219-0048

Title: Respirator Program Records

Background

30 CFR parts 56 and 57 incorporate by reference requirements of ASTM F3387-19, *Standard Practice for Respiratory Protection*. Under this standard, certain records are required to be kept in connection with respirators in MNM mines. This proposed rule amends the written respiratory protection program requirement by replacing the reference to ASTM F3387-19 with the reference to the OSHA requirements of 29 CFR 1910.134, *Respiratory protection*, in these sections.

Summary of Changes

Since the OSHA respiratory protection requirements are generally equivalent to the ASTM standard, the proposed rule would result in a non-substantive change to the ICR under OMB Control Number 1219-0048, "*Respirator Program Records*." This change does not modify the authority or affected mine operators in this ICR. Therefore, there would be no changes in paperwork burden and costs from the approved ICR. This non-substantive change request revises the supporting statement for this ICR due to the updated reference to the OSHA Respiratory Protection Standard.

Summary of the Collection of Information:

Changes in Burden

The calculated burden including respondents and responses remain the same.

Affected Public: Businesses or For-Profit

Estimated Number of Respondents: 2,305 (0 from this proposed rule)

Frequency: On occasion

Estimated Number of Responses: 43,795 (0 from this proposed rule)

Estimated Number of Burden Hours: 23,626 (0 from this proposed rule)

Estimated Recordkeeping Costs to Respondents: $140,000 ($0 from this proposed rule)

C. Existing Information Collection 1219-0158

Type of Review: Non-substantive change to currently approved information collection

OMB Control Number: 1219-0158

Title: Respiratory Protection Program at Coal Mines

Background

30 CFR part 72 incorporates by reference requirements of ASTM F3387-19, *Standard Practice for Respiratory Protection*. Under this standard, certain records are required to be kept in connection with respirators in coal mines. This proposed rule amends the written respiratory protection program requirement by replacing the reference to ASTM F3387-19 with the reference to the OSHA requirements of 29 CFR 1910.134, *Respiratory protection*, in this section.

Summary of Changes

Since the OSHA respiratory protection requirements are generally equivalent to the ASTM standard, the proposed rule would result in a non-substantive change to the ICR under OMB Control Number 1219-0158, "*Respiratory Protection Program at Coal Mines*." This change does not modify the authority or affected mine operators in this ICR. Therefore, there would be no changes in paperwork burden and costs from the approved ICR. This non-substantive change request revises the supporting statement for this ICR due to the updated reference to the OSHA Respiratory Protection Standard.

Summary of the Collection of Information:

Changes in Burden

The calculated burden including respondents and responses remain the same.

Affected Public: Businesses or For-Profit

Estimated Number of Respondents: 1,106 (0 from this proposed rule)

Frequency: On occasion

Estimated Number of Responses: 19,908 (0 from this proposed rule)

Estimated Number of Burden Hours: 11,060 (0 from this proposed rule)

Estimated Recordkeeping Costs to Respondents: $0 ($0 from this proposed rule)

The requirements of information collection contained in the proposed rule will be submitted to OIRA for review.

MSHA is soliciting comments concerning proposed changes to these currently approved information collections under OMB Control Numbers 1219-0156, 1219-0048, and 1219-0158. MSHA is particularly interested in comments that:

• Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the Agency, including whether the information has will have practical utility;

• Evaluate the accuracy of MSHA's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

• Suggest methods to enhance the quality, utility, and clarity of the information to be collected; and

• Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

XI. Other Regulatory Considerations

A. Review Under Executive Order 13132

E.O. 13132, "Federalism" 64 FR 43255 (August 10, 1999), imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt state law or that have federalism implications. The E.O. requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the states and to carefully assess the necessity for such actions. The E.O. also requires agencies to

have an accountable process to ensure meaningful and timely input by state and local officials in the development of regulatory policies that have federalism implications.

MSHA has examined this proposed rule and has determined that it would not have a substantial direct effect on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

B. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of E.O. 12988, "Civil Justice Reform" 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Regarding the review required by section 3(a), section 3(b) of E.O. 12988 specifically requires that executive agencies make every reasonable effort to ensure that the regulation: (1) clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General.

Section 3(c) of E.O. 12988 requires executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. MSHA has completed the required review and determined that, to the extent permitted by law, this proposed rule meets the relevant standards of E.O. 12988.

C. Review Under the Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on state, local, and tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by state, local, and tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)). The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of state, local, and tribal governments on a "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them.

MSHA examined this proposed rule according to UMRA and its statement of policy and determined that the proposal does not contain a Federal intergovernmental mandate, nor is it expected to require expenditures of $100 million or more in any one year by state, local, and tribal governments, in the aggregate, or by the private sector. As a result, the analytical requirements of UMRA do not apply.

D. Review Under the National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), requires each Federal agency to consider the environmental effects of regulatory actions and to prepare an environmental impact statement on Agency actions that would significantly affect the quality of the environment; unless the action is considered categorically excluded under 29 CFR 11.10. MSHA has reviewed the proposed rule in accordance with NEPA requirements and the Department of Labor's NEPA procedures (29 CFR part 11). As a result of this review, MSHA has determined that this proposed rule would not impact air, water, or soil quality, plant or

animal life, the use of land or other aspects of the human environment. Therefore, MSHA has not provided an environmental impact statement.

E. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, MSHA has concluded that it is not necessary to prepare a Family Policymaking Assessment.

F. Review Under Executive Order 12630

Pursuant to E.O. 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights," 53 FR 8859 (March 18, 1988), MSHA has determined that this proposed rule would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

G. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002). MSHA has reviewed this proposed rule and has preliminarily concluded that it is consistent with applicable policies in the OMB guidelines.

H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

E.O. 13045 requires Federal agencies submitting covered regulatory actions to OIRA for review, pursuant to E.O. 12866, to provide OIRA with (1) an evaluation of the environmental health or safety effects that the planned regulation may have on children, and (2) an explanation of why the planned regulation is preferable to other potentially effective and reasonably feasible

alternatives considered by the agency. In E.O. 13045, "covered regulatory action" is defined as rules that may (1) be significant under Executive Order 12866 Section 3(f)(1) (i.e., a rulemaking that has an annual effect on the economy of $100 million or more or would adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, territorial, or tribal governments or communities), and (2) concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children. Environmental health risks and safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest through air, food, water, soil, or product use or exposure.

MSHA has preliminarily determined that this proposed rule does not concern an environmental health or safety risk that may have a disproportionate impact on children. MSHA's proposed rule would continue to limit miners' exposures to respirable crystalline silica. Overall, the Agency's standards, mine operators' policies and procedures, and other safety and health practices including the use of clothing cleaning systems help to reduce or eliminate the amount of take-home exposure, therefore protecting other persons in a miner's household or persons who come into contact with the miner outside of the mine site, including children. MSHA has preliminarily determined that the proposed rule would maintain the lower occupational exposure limit to respirable crystalline silica for all miners that was established in the 2024 Silica Final Rule. These lowered exposure limits provide increased protections for pregnant miners and reduced potential take-home exposures. The proposed rule includes requirements for other actions to protect miners from adverse health risks associated with exposure to respirable crystalline silica and updated respiratory protection standards to better protect miners from hazardous airborne contaminants.

MSHA has no evidence that the environmental health or safety risks posed by respirable crystalline silica, including "take-home" exposure to respirable crystalline silica,

disproportionately affect children. Therefore, MSHA concludes no further analysis or action is needed, in accordance with E.O. 13045.

I. Review Under Executive Order 13175

E.O. 13175, "Consultation and Coordination With Indian Tribal Governments" 65 FR 67249 (Nov. 9, 2000), requires agencies to consult with tribal officials when developing policies that may have "tribal implications." This proposed rule does not have "tribal implications" because it will not "have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes." Accordingly, under E.O. 13175, no further Agency action or analysis is required.

J. Review Under Executive Order 13211

E.O. 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" 66 FR 28355 (May 22, 2001), requires agencies to publish a statement of energy effects when a rule has a significant energy action that adversely affects energy supply, distribution, or use. MSHA has reviewed this proposed rule for its energy effects. For the energy analysis, this proposed rule would not exceed the relevant criteria for adverse impact.

K. Executive Order 13272: Proper Consideration of Small Entities in Agency Rulemaking

MSHA has reviewed the proposed rule to assess and take appropriate account of its potential impact on small businesses, small governmental jurisdictions, and small organizations. MSHA's analysis is presented in *Section IX. Regulatory Flexibility Analysis*.

L. Review Under Additional Executive Orders and Presidential Memoranda

MSHA has examined this proposed rule and has determined that it is consistent with the policies and directives outlined in E.O. 14154, "Unleashing American Energy" 90 FR 8353 (Jan. 29, 2025); E.O. 14192, "Unleashing Prosperity Through Deregulation" 90 FR 9065 (Feb. 6, 2025); and the Presidential Memorandum, "Delivering Emergency Price Relief for American Families and Defeating the Cost-of-Living Crisis" 90 FR 8245 (Jan. 28, 2025).

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XIII. Authority and Signature

Wayne D. Palmer,

Assistant Secretary

for Mine Safety and Health.

List of Subjects

30 CFR Part 56

Chemicals, Electric power, Explosives, Fire prevention, Hazardous substances, Incorporation by reference, Metals, Mine safety and health, Noise control, Nonmetal, Reporting and recordkeeping requirements, Surface mines.

30 CFR Part 57

Chemicals, Electric power, Explosives, Fire prevention, Gases, Hazardous substances, Incorporation by reference, Metals, Mine safety and health, Noise control, Nonmetal, Radiation protection, Reporting and recordkeeping requirements, Underground mines.

30 CFR Part 60

Coal, Incorporation by reference, metal and nonmetal mines, Medical surveillance, Mine safety and health, Respirable crystalline silica, Reporting and recordkeeping requirements; Surface mines, Underground mines.

30 CFR Part 71

Coal, Incorporation by reference, Mine safety and health, Respirable crystalline silica, Surface coal mines, Underground coal mines.

30 CFR Part 72

Coal, Health standards, Incorporation by reference, Mine safety and health, Training, Underground mines.

For the reasons set forth in the preamble, and under the authority of the Federal Mine Safety and Health Act of 1977, as amended, MSHA proposes to amend chapter I of title 30 of the Code of Federal Regulations as follows:

PART 56—SAFETY AND HEALTH STANDARDS-SURFACE METAL AND NONMETAL MINES

Subpart D–Air Quality and Physical Agents

1. The authority citation for part 56 continues to read as follows:

Authority: 30 U.S.C. 811.

2. Amend § 56.5005T by:

a. Revising paragraph (b); and

b. Removing and reserving paragraph (c).

The revisions read as follows:

§ 56.5005T Control of exposure to airborne contaminants.

* * * * *

(b) A written respiratory protection program consistent with the requirements of the Department of Labor's Occupational Safety and Health Administration in § 1910.134 of title 29 of the Code of Federal Regulations (29 CFR 1910.134). MSHA adopts by reference the requirements of 29 CFR 1910.134, Respiratory protection, into this section.

(1) Comply with 29 CFR 1910.134 with the following exclusions:

(i) Do not comply with the exception for oxygen-deficient atmospheres in paragraph (d)(2)(iii) of 29 CFR 1910.134.

(ii) Do not comply with the recordkeeping requirements for medical evaluations in paragraph (m)(1) of 29 CFR 1910.134.

(2) Medical evaluation records required under this section shall be retained for the duration of the miner's employment plus 6 months.

(c) [Reserved]

PART 57—SAFETY AND HEALTH STANDARDS-UNDERGROUND METAL AND NONMETAL MINES

3. The authority citation for part 57 continues to read as follows:

Authority: 30 U.S.C. 811.

Subpart D–Air Quality, Radiation, Physical Agents, and Diesel Particulate Matter

4. Amend § 57.5005T by:

a. Revising paragraph (b); and

b. Removing and reserving paragraph (c).

The revisions read as follows:

§ 57.5005T Control of exposure to airborne contaminants.

* * * * *

(b) A written respiratory protection program consistent with the requirements of the Department of Labor's Occupational Safety and Health Administration in § 1910.134 of title 29 of the Code of Federal Regulations (29 CFR 1910.134). MSHA adopts by reference the requirements of 29 CFR 1910.134, Respiratory protection, into this section.

(1) Comply with 29 CFR 1910.134 with the following exclusions:

(i) Do not comply with the exception for oxygen-deficient atmospheres in paragraph (d)(2)(iii) of 29 CFR 1910.134.

(ii) Do not comply with the recordkeeping requirements for medical evaluations in paragraph (m)(1) of 29 CFR 1910.134.

(2) Medical evaluation records required under this section shall be retained for the duration of the miner's employment plus 6 months.

(c) [Reserved]

PART 60—RESPIRABLE CRYSTALLINE SILICA

5. The authority citation for part 60 continues to read as follows:

Authority: 30 U.S.C. 811, 813(h) and 957.

6. Amend § 60.11 by revising paragraph (b) to read as follows:

§ 60.11 Methods of compliance.

* * * * *

(b) Rotation of miners shall not be used as a corrective action under § 60.13 when a miner's exposure is above the PEL.

7. Revise and republish § 60.12 to read as follows:

§ 60.12 Exposure monitoring.

(a) *Sampling*.

(1) Mine operators shall commence sampling by the compliance date in § 60.1.

(2) Mine operators shall conduct sampling as frequently as necessary to assess the full-shift, 8-hour TWA exposure of respirable crystalline silica to each miner who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.

(3) If the sampling under paragraph (a)(2) of this section is at or above the action level but at or below the PEL, then the mine operator shall make approved respirators available before the start of the next work shift in accordance with § 60.14(b) and (c) until sampling indicates exposures are below the action level.

(4) If the sampling under paragraph (a)(2) of this section is above the PEL, then the mine operator shall immediately report all operator samples above the PEL to the MSHA District Manager or to any other MSHA office designated by the MSHA District Manager.

(b) *Corrective actions sampling*. Where the most recent sampling indicates that miner exposures are above the PEL, the mine operator shall sample after corrective actions are taken pursuant to § 60.13 until the sampling indicates that miner exposures are at or below the PEL. Once sampling indicates that miner exposures are at or below the PEL, the mine operator shall contact the MSHA District Manager or any other MSHA office designated by the MSHA District Manager.

(c) *Sampling requirements*.

(1) Sampling shall be performed for the duration of a miner's regular full shift and during typical mining activities, including shaft and slope sinking, construction, and removal of overburden.

(2) The full-shift, 8-hour TWA exposure for such miners shall be measured based on:

(i) Personal breathing-zone air samples for metal and nonmetal operations; or

(ii) Occupational environmental samples collected in accordance with § 70.201(c), § 71.201(b), or § 90.201(b) of this chapter for coal operations.

(3) Where several miners perform the same tasks on the same shift and in the same work area, the mine operator may sample a representative fraction (at least two) of these miners to meet the requirements in paragraphs (a) through (c) of this section. In sampling a representative fraction of miners, the mine operator shall select the miners who are expected to have the highest exposure to respirable crystalline silica.

(4) The mine operator shall use respirable-particle-size-selective samplers that conform to ISO 7708:1995(E) to determine compliance with the PEL. ISO 7708:1995(E), Air quality—Particle size fraction definitions for health-related sampling, First Edition, 1995-04-01, is incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This incorporation by reference (IBR) material is available for inspection at the Mine Safety and Health Administration (MSHA) and at the National Archives and Records Administration (NARA). Contact MSHA at: MSHA's Office of Standards, Regulations, and Variances, 200 Constitution Avenue NW, Washington, DC 20210; (202) 693-9440; or any Mine Safety and Health Enforcement District Office. For information on the availability of this material at NARA, visit www.archives.gov/federal-register/cfr/ibr-locations or email fr.inspection@nara.gov. The material may be obtained from the International Organization for Standardization (ISO), CP 56, CH-1211 Geneva 20, Switzerland; phone: + 41 22 749 01 11; fax: + 41 22 733 34 30; website: www.iso.org.

(d) *Methods of sample analysis*.

(1) The mine operator shall use a laboratory that is accredited to ISO/IEC 17025 “General requirements for the competence of testing and calibration laboratories” with respect to respirable crystalline silica analyses, where the accreditation has been issued by a body that is

compliant with ISO/IEC 17011 “Conformity assessment—Requirements for accreditation bodies accrediting conformity assessment bodies.”

(2) The mine operator shall ensure that the laboratory evaluates all samples using respirable crystalline silica analytical methods specified by MSHA, the National Institute for Occupational Safety and Health (NIOSH), or the Occupational Safety and Health Administration (OSHA).

(3) Noncompliance with the PEL or exposure at or above the action level is demonstrated when a full-shift, 8-hour TWA exposure of respirable crystalline silica is above the PEL or at or above the action level, including in each case, an error factor of 21 percent.

(4) A citation for noncompliance with the PEL will be based on a single, full-shift sample of respirable crystalline silica taken by MSHA and calculated as a full-shift, 8-hour TWA.

(e) *Sampling records*. For each sample taken pursuant to paragraphs (a) through (c) of this section, the mine operator shall make a record of the sample date, the occupations sampled, and the concentrations of respirable crystalline silica and respirable dust and post the record and the laboratory report on the mine bulletin board and, if applicable, by electronic means, for the next 31 days, upon receipt.

8. Amend § 60.14 by revising paragraphs (a) and (c) to read as follows:

§ 60.14 Respiratory protection

(a) *Use of respirators at metal and nonmetal mines*. Metal and nonmetal miners may work for reasonable periods of time using respiratory protection in accordance with paragraph (c) of this section when miners must work in concentrations of respirable crystalline silica above the PEL while:

* * * * *

(c) * * *

(2) When approved respirators are used, the mine operator must have a written respiratory protection program that meets the requirements of the Department of Labor’s Occupational Safety and Health Administration in § 1910.134 of title 29 of the Code of Federal Regulations

(29 CFR 1910.134). MSHA adopts by reference the requirements of 29 CFR 1910.134, Respiratory protection, into this section.

(3) Comply with 29 CFR 1910.134 with the following exclusions:

(i) Do not comply with the exception for oxygen-deficient atmospheres in paragraph (d)(2)(iii) of 29 CFR 1910.134.

(ii) Do not comply with the recordkeeping requirements for medical evaluations in paragraph (m)(1) of 29 CFR 1910.134.

(d) *Medical evaluation records*. The mine operator shall make a record of medical evaluations required under paragraph (c)(2) of this section.

9. Amend § 60.15 by revising paragraphs (a), (b), (c), (d), and (e) to read as follows:

§ 60.15 Medical surveillance.

(a) *Medical surveillance.* Each mine operator shall provide to each miner periodic medical examinations performed by a physician or other licensed health care professional (PLHCP) or specialist, as defined in § 60.2, at no cost to the miner.

* * * * *

(b) *Voluntary metal and nonmetal medical examinations.* Each metal and nonmetal mine operator shall provide the opportunity to all miners employed at the mine to have the medical examinations specified in paragraph (a) of this section as follows:

(1) During an initial 5-year period.

(2) * * *

(3) For each metal and nonmetal miner who begins work in the mining industry for the first time, the mine operator shall provide the opportunity for medical examinations specified in paragraph (a) of this section as follows:

(i) An initial medical examination no later than 60 days after beginning employment;

(ii) A follow-up medical examination no later than 3 years after the initial examination in paragraph (b)(3)(i) of this section; and

(iii) A follow-up medical examination conducted by a specialist no later than 2 years after the examinations in paragraph (b)(3)(ii) of this section if the chest X-ray shows evidence of pneumoconiosis or the spirometry examination indicates evidence of decreased lung function.

(c) *Mandatory Medical examinations for all miners exposed above the PEL.* Each metal and nonmetal mine operator and each coal mine operator shall provide the medical examinations specified in paragraph (a) of this section to all miners who are exposed above the PEL based upon an MSHA sample within 60 days of the operator's receipt of the sample results, except for miners who have, within the last 2 years, received a medical examination pursuant to this section or in accordance with 30 CFR 72.100.

(d) *Medical examinations results*. The mine operator shall ensure that the results of medical examinations or tests made pursuant to this section shall be provided from the PLHCP or specialist within 30 days of the medical examination to the miner, and at the request of the miner, to the miner's designated physician or another designee identified by the miner.

(e) *Written confirmation of medical examination*. The mine operator shall obtain written confirmation of a miner's medical examination from the PLHCP or specialist within 30 days of the medical examination. The written confirmation shall contain only the following:

(1) The date of the medical examination; and

(2) A statement that the examination has met the requirements of this section.

(f) *Written confirmation of medical examination records*. The mine operator shall maintain a record of the written confirmations of medical examination received from the PLHCP or specialist under paragraph (e) of this section.

10. Revise § 60.16 to read as follows:

§ 60.16 Recordkeeping requirements.

(a) Table 1 to this paragraph (a) lists the records the mine operator shall retain and their retention period.

(1) Sampling records made under § 60.12(e) shall be retained for at least 5 years from the sample date.

(2) Corrective actions records made under § 60.13(c) shall be retained for at least 5 years from the date of each corrective action. These records must be stored with the records of related sampling under § 60.12(e).

(3) Written determination records received from a PLHCP under § 60.14(b) shall be retained for the duration of the miner's employment plus 6 months.

(4) Medical evaluation records under § 60.14(d) shall be retained for the duration of the miner's employment plus 6 months.

(5) Written confirmation of medical examination records received from a PLHCP or specialist under § 60.15(f) shall be retained for the duration of the miner's employment plus 6 months.

Table 1 to Paragraph (a)—Recordkeeping Requirements

Record	Section references	Retention period
1. Sampling records	§ 60.12(e)	At least 5 years from sample date.
2. Corrective actions records	§ 60.13(c)	At least 5 years from date of each corrective action.
3. Written determination records received from a PLHCP	§ 60.14(b)	Duration of miner's employment plus 6 months.
4. Medical evaluation records from a respiratory protection program	§ 60.14(d)	Duration of miner's employment plus 6 months.
5. Written confirmation of medical examination records received from a PLHCP or specialist	§ 60.15(f)	Duration of miner's employment plus 6 months.

* * * * *

11. Revise § 60.17 to read as follows:

§ 60.17 Severability.

Each section and provision of this part, as well as sections in 30 CFR parts 56, 57, 70, 71, 72, 75, and 90 that address respirable crystalline silica or respiratory protection, is separate and severable from the other sections and provisions. If any provision of this subpart is held to be invalid or unenforceable by its terms, or as applied to any person, entity, or circumstance, or is

stayed or enjoined, that provision shall be construed so as to continue to give the maximum effect to the provision permitted by law, unless such holding shall be one of utter invalidity or unenforceability, in which event the provision shall be severable from these sections and shall not affect the remainder of sections or provisions thereof.

PART 71—MANDATORY HEALTH STANDARDS – SURFACE COAL MINES AND SURFACE WORK AREAS OF UNDERGROUND COAL MINES

12. The authority citation for part 71 continues to read as follows:

Authority: 30 U.S.C. 811, 813(h), 957.

Subpart H – Airborne Contaminants

13. Revise § 71.700 to read as follows:

§ 71.700 Inhalation hazards; threshold limit values for gases, dust, fumes, mists, and vapors.

(a) No operator of an underground coal mine and no operator of a surface coal mine may permit any person working at a surface installation or surface worksite to be exposed to airborne contaminants (other than respirable coal mine dust, respirable crystalline silica, and asbestos dust) in excess of, on the basis of a time-weighted average, the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1973 edition of the Conference's publication, entitled TLV's Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1973, pages 1 through 54. This publication is incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This incorporation by reference (IBR) material is available for inspection at the Mine Safety and Health Administration (MSHA) and at the National Archives and Records Administration (NARA). Contact MSHA at: MSHA’s Office of Standards, Regulations, and Variances, 201 12th Street South, Arlington, VA 22202-5450; (202) 693-9440; or at any Mine Safety and Health Enforcement District Office. For information on the availability of this material at NARA, visit www.archives.gov/federal-

register/cfr/ibr-locations or email fr.inspection@nara.gov. The material may be obtained from American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Attn: Customer Service, Cincinnati, OH 45240; www.acgih.org.

* * * * *

PART 72—HEALTH STANDARDS FOR COAL MINES

14. The authority citation for part 72 continues to read as follows:

Authority: 30 U.S.C. 811, 813(h), 957.

Subpart E—Miscellaneous

15. Revise § 72.710 to read as follows:

§ 72.710 Selection, fit, use, and maintenance of approved respirators.

(a) When approved respirators are used, the mine operator must have a written respiratory protection program that meets the following requirements of the Department of Labor's Occupational Safety and Health Administration in § 1910.134 of title 29 of the Code of Federal Regulations (29 CFR 1910.134). MSHA adopts by reference the requirements of 29 CFR 1910.134, Respiratory protection, into this section.

(b) Comply with 29 CFR 1910.134 with the following exclusions:

(1) Do not comply with the exception for oxygen-deficient atmospheres in paragraph (d)(2)(iii) of 29 CFR 1910.134.

(2) Do not comply with the recordkeeping requirements for medical evaluations in paragraph (m)(1) of 29 CFR 1910.134.

(c) Medical evaluation records required under this section shall be retained for the duration of the miner's employment plus 6 months.

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